Western
AREA POWER
ADMINISTRATION

# DESERT SOUTHWEST REGION

# FISCAL YEAR 2016-2025 TEN YEAR PLAN

## ANNUAL CUSTOMER MEETING
## AUGUST 26, 2015
## DESERT SOUTHWEST REGIONAL OFFICE
## 615 S 43RD AVE
## PHOENIX, AZ

SAFETY
A HABIT TO LIVE BY

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## Introduction

Western Area Power Administration (Western) markets and delivers reliable, cost-based hydroelectric power and related services within a 15-State region of the central and western parts of the United States. Western is one of four power marketing administrations within the U.S. Department of Energy whose role is to market and transmit electricity from multi-use water projects. Western's transmission system carries electricity from 57 power plants. These power plants are operated by agencies such as the Bureau of Reclamation, U.S. Army Corps of Engineers, the International Boundary and Water Commission, as well as a number of private entities. These plants combined have an installed capacity of 10,395 megawatts.

Western is divided into four primary regions: Upper Great Plains (UGP) located in Billings, Montana; Rocky Mountain Region (RMR) located in Loveland, Colorado; Sierra Nevada Region (SNR) located in Folsom, California; and Desert Southwest Region (DSW) located in Phoenix, Arizona. In addition to the four operating regions, a Colorado River Storage Management Center is located in Salt Lake City. All the regions are supported by a central Headquarters (HQ) office located in Lakewood, Colorado.

Western's HQ serves many diverse customers, ranging from Congress to Native American power customers, special interests groups, and Western's regional offices. HQ is responsible for designing Western's electrical projects, and administers the majority of the support services such as legal and human resources.

The Desert Southwest Region (DSW) sells power in Arizona, Nevada, Southern California, and portions of the southwest, to wholesale customers such as towns, rural electric cooperatives, public utility and irrigation districts, Federal, state and military agencies, Native American tribes, investor-owned utilities, power marketers and U.S. Bureau of Reclamation customers. DSW is committed to maintaining and operating a reliable transmission system. The Ten Year Plan (TYP) provides both a capital investment plan, as well as a funding plan, that will maintain reliable power delivery to Western's customers.

The purpose of the TYP presentation for DSW is to clearly describe challenges, goals, objectives, strategies, and accomplishments, as well as provide a mechanism for customer collaboration.

The TYP is revised annually in response to:

- Approved funding allocations for the budget year
- Optimized project priorities
- Emerging issues within the transmission system
- Mandates or regulatory requirements
- New contractual requirements

# 1.0 Desert Southwest Power Systems

## 1.1 Boulder Canyon Project

Hoover Dam is the backbone of the Boulder Canyon Project. The Hoover Power plant has 17 generating units, with an installed capacity of 2,079 megawatts (MW). Yearly average generation of 4.3 billion kilowatt hours can serve the annual electrical needs of nearly 1.3 million people. Power from this project is marketed as long-term contingent capacity with associated firm energy. This contingent capacity and associated firm energy are available, as long as there are sufficient water releases to generate the power required to allow Western to meet its power delivery obligations of firm energy each year. The majority of Western's facilities in the Boulder Canyon Project are 230kV transmission lines, extending approximately 12 miles from Hoover Dam to the Mead Substation.

System Information

| | |
|---|---|
| Substations | 4 |
| Transmission Line Structures | 424 |
| Total Circuit Miles | 53.3 |

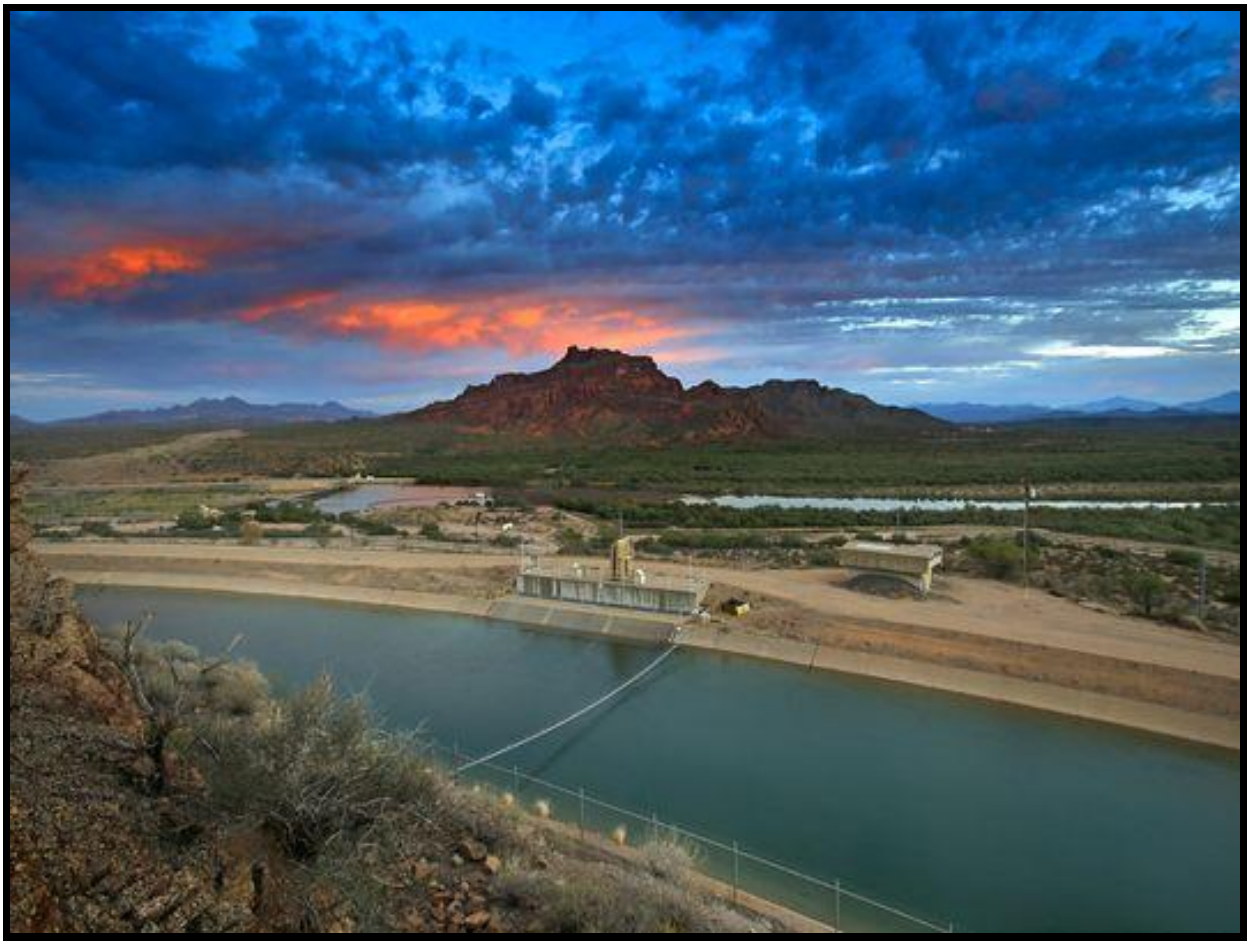

***Hoover Dam & Lake Mead***

## 1.2 Central Arizona Project (CAP)

The Central Arizona Project (CAP) is one of three related water development projects that make up the Colorado River Basin Project. The CAP was developed to provide water throughout Arizona and New Mexico. DSW operates and maintains the power system required for the CAP system. Surplus power is marketed by DSW on behalf of the Bureau of Reclamation.

System Information

| | |
|---|---|
| Substations | 9 |
| Transmission Line Structures | 2,077 |
| Total Circuit Miles | 288 |



***Section of the Central Arizona Project Canal System***

## 1.3 Colorado River Front Work and Levee Project (Levee)

The Colorado River Front Work and Levee System (Levee) extends from Lees Ferry, Arizona, the division point between the Upper and Lower Colorado River Basins, to the southerly international boundary between the United States and Mexico. Spanning a distance of approximately 700 river miles, the purpose of this system is to control floods, improve navigation, and flow regulation of the Colorado River.

This program includes control of sediment movement, protection of communities, transportation facilities, and maintenance of agricultural land by controlling the bed and banks of the river. This system also supports the preservation and enhancement of the fish, wildlife, and recreation facilities. Western's 34.5kV and 69kV system in the Yuma area primarily supports the pumping load required by the Bureau of Reclamation to carry out the activities described above.

System Information

| | |
|---|---|
| Substations | 3 |
| Transmission Line Structures | 348 |
| Total Circuit Miles | 27 |

## 1.4 Salinity Project

The purpose of this system is to regulate the salinity levels of the Colorado River water delivered to Mexico. This program utilizes Western's 34.5kV and 69kV system in the Yuma area primarily by supporting the pumping of ground water to meet the salinity requirements.

System Information

| | |
|---|---|
| Substations | 3 |
| Transmission Line Structures | 408 |
| Total Circuit Miles | 34 |

## 1.5 Colorado River Storage Project (CRSP)

The CRSP provides water-use developments in the upper Colorado River basin and the lower Colorado River, as required by the Colorado River Compact. Five Federal power plants are associated with the project. Of the five power plants, Glen Canyon generation provides 1340 MW and is the primary CRSP source of power for the DSW region. DSW maintains the Western Area Lower Colorado System (WALC), including Kayenta, Longhouse Valley, Glen Canyon, Flagstaff, and Pinnacle Peak Substations. In addition to the aforementioned substations, DSW operates and maintains, Mexican Hat, Zilner, Glen Canyon, Preston Mesa, Elden Mountain, Mingus Mountain, Tower Mountain, Thompson, and Lolamia Point communication sites.

CRSP provides for the electrical needs of more than one million people spread throughout Colorado, Utah, New Mexico, and Arizona; as well as portions of southern California, Nevada, and Wyoming. More than 2,323 miles of high-voltage transmission lines exist within these states to deliver power to customers.

System Information

| | |
|---|---|
| Substations | 9 |
| Transmission Line Structures | 2,077 |
| Total Circuit Miles | 288 |

***Aerial view of Glen Canyon Substation and Dam***

## 1.6 Pacific Northwest/Southwest Intertie Project (Intertie)

The Pacific Northwest Pacific Southwest Intertie (Intertie) was authorized by the Pacific Northwest Power Marketing Act. Originally, Intertie was planned to be an AC and DC system which would connect the Pacific Northwest with the Pacific Southwest. As authorized, the overall project is a cooperative construction venture between Federal and non-Federal entities. However, due to delays in construction funding, interest among the potential users waned. These events resulted in the indefinite postponing of DC line construction. Consequently, the facilities constructed provide AC transmission service.

Western's portion of Intertie consists of two parts: a northern portion and a southern portion. The northern portion is administered by Western's Sierra Nevada Region (SNR), and the southern portion by Western's DSW Region. The southern portion is treated as a separate (stand-alone) project for repayment and operational purposes.

The southern portion consists of a 345kV transmission line from the Mead Substation to the Liberty Substation, a 230kV transmission line from Liberty Substation to Westwing Substation, a 230kV transmission line from Westwing Substation to Pinnacle Peak Substation, and two 500kV segments from Mead Substation to Perkins Substation and Mead Substation to Marketplace Substation.

System Information

| | |
|---|---|
| Substations | 9 |
| Transmission Line Structures | 2,580 |
| Total Circuit Miles | 951 |

***Perkins Substation***

## 1.7 Parker–Davis Project

Parker-Davis has the majority of the DSW regional power facilities, and was formed by consolidating two projects in 1954; Parker Dam and Davis Dam. Parker Dam and Power Plant, which created Lake Havasu (155 miles below Hoover Dam on the Colorado River), were authorized by the Rivers and Harbors Act. Davis Dam, located on the Colorado River, 67 miles below Hoover Dam, created Lake Mohave. Davis Dam has storage capacity of 1.8 million acre-feet with generating capacity 316 megawatts (winter season) and 835 megawatts (summer season). Parker-Davis is operationally integrated with the Hoover Power Plant. In the event that Parker-Davis generation is insufficient to meet firm contractual obligations, Hoover generation may be used. Alternatively, Western may purchase power from other sources.

The Parker-Davis Project supplies the electrical needs of more than 300,000 people. Power generated from this project is marketed to customers in Nevada, Arizona, and California. DSW's facilities which are part of the Parker-Davis Project include substations such as Davis, Parker, Gila, Lone Butte, Coolidge, and Tucson. Transmission lines within this project range from 34.5kV to 230kV, and are constructed of wood, steel, or concrete. All of the wood pole replacement projects identified in this TYP belong to Parker-Davis.

System Information

| | |
|---|---|
| Substations | 53 |
| Transmission Line Structures | 9,993 |
| Total Circuit Miles | 1,534 |

***Aerial Photo of Davis Substation***

# 2. Construction Project Funding History

Construction projects, in comparison to RRAD's, are typically more complex in nature, and require the use of an outside construction contractor in lieu of Federal labor (force account). These projects are usually multi-year funded, and the majority will cross fiscal years and take extended periods of time to complete. Federal labor and contract labor are utilized to complete the project design and specifications, environmental requirements, procurement of equipment and construction contracts, construction management, project tracking, financial management, commissioning, and closeout. The construction contractor will typically install the physical components of the project, such as circuit breakers, transformers, steel structures, control buildings, transmission lines, structures, and conductors.

All projects currently scheduled for FY16 execution are dependent on the receipt of adequate appropriated funding in a timely manner. The construction project list may be adjusted in order to accommodate any changes in the amount of funding received and the time of year the funding is provided. Appropriated funding cannot be carried over across fiscal years; therefore, a Continuing Resolution (CR) (or any other delay in funding) dramatically impacts DSW's ability to execute funds in a timely manner. A CR not only restricts the amount of funds available for construction contracts, but also restricts the amount of Federal labor that can be expended to get the design and specifications for a project completed prior to fiscal year end.

In FY10, Western and its customers collaborated to address this ongoing struggle with project funding and collectively decided to create a method to use prepayment funding for selected construction projects. Projects that are proposed for the use of prepayments funds are first submitted for funding through the appropriated funding process. If adequate appropriations are not received, then the approved prepayment project(s) are executed using prepayment funding.

The Construction Program is reviewed by Western's management team annually in June. Potential projects suitable for prepayment funding are selected from the list of projects previously submitted to Congress for the receipt of appropriated funding. Proposed prepayment projects selected by Western are then presented to Western's customers for review and consideration in the Ten-Year Plan booklet, published annually. Customers are engaged in a mid-spring TYP preview meeting, providing a forum for Western and its customers to have an open dialog about the projects, answering any questions or concerns that the customers may have, and optimizing project priorities. In the fall, DSW presents its annual TYP to the customers. An official vote on the proposed prepayment projects is conducted approximately one month after the annual TYP meeting, to ensure that only projects that receive customer support for funding through this mechanism are pursued.

## 2.1 Appropriated Construction Funding History

| Construction Year | Non-Program |
|---|---|
| FY14 Appropriations Requested | $46,029,720 |
| FY14 Appropriations Received | $3,500,000 |
| FY15 Appropriations Request | $36,256,000 |
| FY15 Appropriations Received | $7,120,000 |
| FY16 Appropriations Request | $28,700,000 |
| FY16 Appropriations Received | Undetermined |
| FY17 Appropriations Request | $13,900,000 |
| FY17 Anticipated Appropriations | Undetermined |
| FY18 Appropriations Request | Undetermined |
| FY18 Anticipated Appropriations | Undetermined |

## 2.2 Prepayment Construction Funding History

| Construction Year | Amount |
|---|---|
| FY 11 Prepayment Amount | $14,982,000 |
| FY 12 Prepayment Amount | $22,180,000 |
| FY 13 Prepayment Amount | $25,261,196 |
| FY 14 Prepayment Amount | $22,330,500 |
| FY 15 Prepayment Amount | $31,850,000 |
| **FY 16 Proposed Prepayment Amount** | **$17,407,000** |

# 3. Major Construction Projects Completed

## 3.1 Blythe–Headgate Rock Reroute (Black Point Mesa)

This transmission line reroute consisted of rerouting approximately 0.7 miles of the Parker-Blythe 161kV Transmission Line around the archaeologically-sensitive site known as Black Point Mesa. The rebuild upgraded the existing 161kV line, originally built in 1951, to 1272 ACSS conductor across seven, 230kV steel monopoles, of which four were dead-end structures. The reroute itself crossed east of US 95, over private land, cultivated fields, and a distribution line. This project enabled Western to preserve historical sites, which, in turn, will provide Western with the ability to maintain and access this area for both maintenance and emergency repair without damage to any culturally sensitive sites.

Project Status

- Construction contract awarded: July 2014
- Construction notice to proceed: August 2014
- Line energized: February 2015
- Project is currently in close-out

| FUND | BUDGET | COST TO DATE |
|---|---|---|
| Prepayment | $1,855,500 | $1,564,328 |
| Appropriated | $662,130 | $632,816 |
| **TOTAL** | **$2,517,630** | **$2,197,144** |

***Steel Monopoles Installed around Black Point Mesa***

## 3.2 Mead Substation Stage 14 (Transformer Addition)

A new 600MVA 345/230/24kV transformer was purchased for the Mead Substation and placed on a pad near the existing KU2A transformer. The new KU2B transformer will ultimately be placed in service and operated in parallel with the existing transformer. The new arrangement will also provide the flexibility to operate the transformers individually, which lessen any potential service interruptions for routine maintenance. The new transformer is fully assembled, but will remain de-energized until completion of Mead Substation Stage 15.

Project Status

- Transformer assembled at Mead: March 2015
- Project is currently in close-out

| FUND | BUDGET | COST TO DATE |
|---|---|---|
| Prepayment | N/A | N/A |
| Appropriated | $4,800,000 | $4,424,063 |
| **TOTAL** | **$4,800,000** | **$4,424,063** |

***New Mead Substation KU2B Transformer***

## 3.3 ED2-ED4 115kV Transmission Line Rebuild

The scope of this project included the rebuild and upgraded of 9 miles of existing 115kV wood pole transmission line, to 230kV, double circuit, steel poles and 1272 kcmil ACSS conductor. Included in the upgrade was the installation of 24-count fiber optics OPGW. The line was rebuilt to 230kV standards using double-circuit design. The phase conductors for one circuit were installed and are operated at 115kV.

Project Status

- Construction notice to proceed: September 2014
- Line energized: April 2015
- Project is currently in close-out

| FUND | BUDGET | COST TO DATE |
|---|---|---|
| Prepayment | $11,100,000 | $5,456,715 |
| Appropriated | $1,705,171 | $1,705,171 |
| **TOTAL** | **$12,805,171** | **$7,161,886** |

***Construction of ED2-ED4 115kV Transmission Line***

# 4. Active Construction Projects

## 4.1 Davis Substation Maintenance Building

This new maintenance building will provide office and shop space for electricians, relay, and communications technicians assigned to the Davis Substation. The new building will be a pre-engineered 80'x 40' metal structure. In addition to the building, a parking shade structure will also be installed.

Project Status

- Construction contractor mobilized: May 2015
- Projected completion: October 2015

| FUND | BUDGET | COST TO DATE |
|---|---|---|
| Prepayment | N/A | N/A |
| Appropriated | $1,335,000 | $1,232,542 |
| **TOTAL** | **$1,335,000** | **$1,232,542** |

***Foundation work on the New Davis Maintenance Building | Former site of 69kV yard***

## 4.2 Gila-North Gila, Gila-Knob 161kV Transmission Line Reroute

This project will replace an existing 161kV circuit with 3500 feet of new 230kV transmission line; which will be operated at 161kV initially. This project is being performed in conjunction with APS and their new transmission line in the corridor connecting Western's Gila and APS's North Gila Substations. There is extensive right-of-way co-ordination required, as Western holds the west 135 feet of the corridor for its Gila-Knob 161kV and Gila-North Gila 69kV circuits. As laid-out in the Principle's Agreement, APS would acquire 65 feet on the east, and use the adjacent, existing Gila-North Gila 35 feet right of way (ROW) to make 100 feet of total right-of-way for the new North Gila-Orchard double-circuit 230kV line. In exchange for the 35 feet, APS will make space on their new line structures for Western's Gila-North Gila 69kV circuit.

Project Status

- Extensive right-of-way work is underway

| FUND | BUDGET | COST TO DATE |
|---|---|---|
| Prepayment | $2,000,000 | $190,182 |
| Appropriated | $837,332 | $262,332 |
| **TOTAL** | **$2,837,332** | **$452,514** |

***Gila-North Gila***

## 4.3 Facility Ratings Mitigation Year 2

During DSW's NERC Mitigation Year 2, facility assessment, 1087 miles of transmission line was LiDAR surveyed, resulting in 240 potential violations. After field verification, 79 deficiencies were found requiring a design solution, with the majority of them existing on four different line segments, which required construction in order to mitigate the violation. Although the required work is on four different line segments, the solicitation will be a single construction contract.

Line Segments

- Gavilan Peak-Prescott
- Prescott-Round Valley
- Round Valley-Peacock
- Black Mesa-Topock (CAP)

The mitigation activities involve a variety of actions that include, but are not limited to, conductor removal, conductor installation, removing and replacing double string tension insulators, pole installation, and lattice structure modifications.

Project Status

- Construction contract awarded: January 2015
- Construction projected to start: Fall 2015
- Projected completion: 2nd Quarter of 2017

| FUND | BUDGET | COST TO DATE |
|---|---|---|
| Prepayment | $8,525,000 | $7,104,189 |
| Appropriated | $514,565 | $147,319 |
| **TOTAL** | **$9,039,565** | **$7,251,508** |

***Vegetation Management on Peacock-Round Valley 230kV Line***

## 4.4 Mead Substation Stage 15

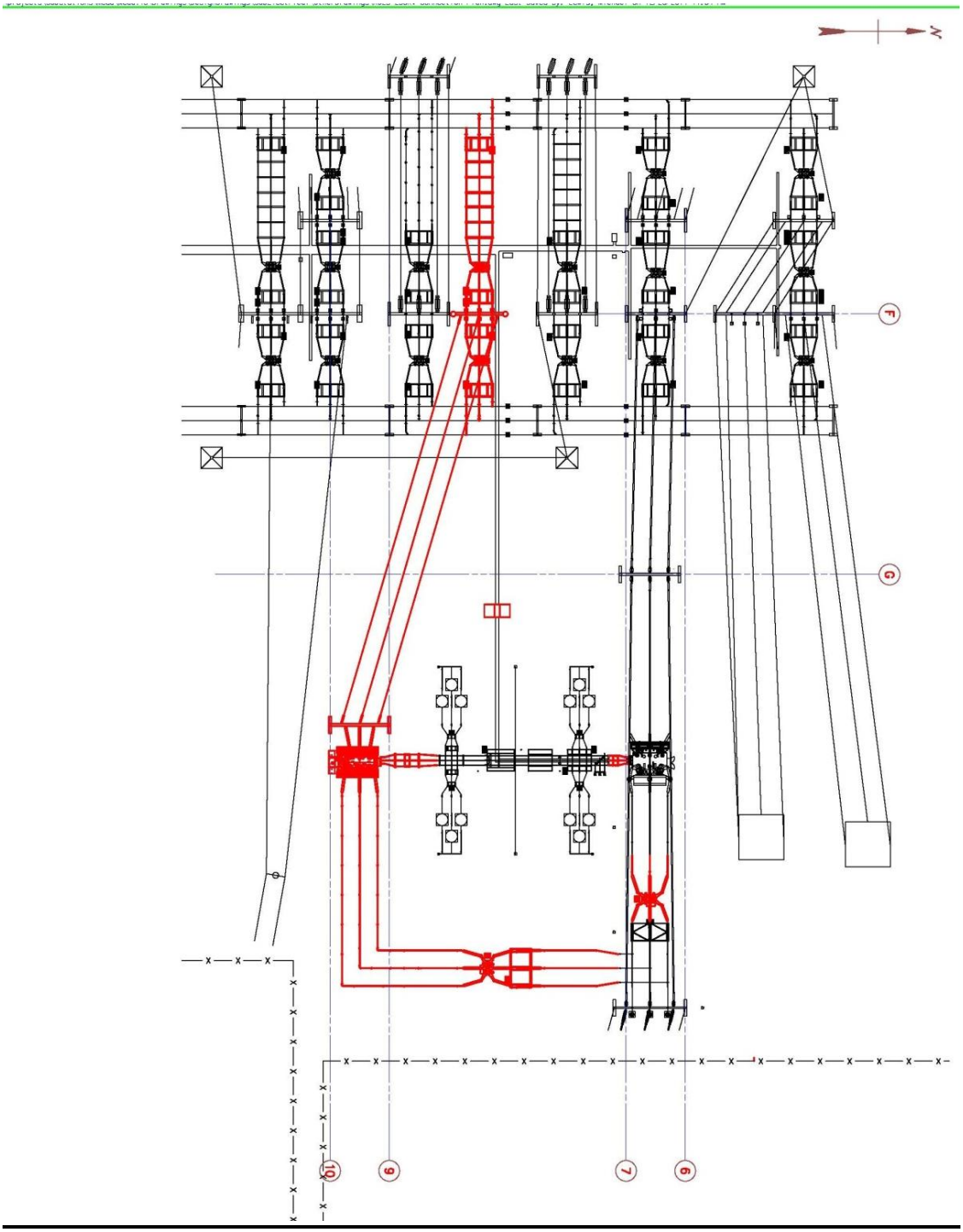
An additional transformer was ordered, placed on a new concrete pad, and assembled in Mead Substation Stage 14. Stage 15 will install all necessary bus, breakers, switches and relays in order to operate the new transformer in parallel with the existing KU2A transformer. A construction contract is being solicited through procurement, and the work will be awarded before the end of the fiscal year.

Project Status

- Construction contract awarded prior to the end of FY15
- Construction projected to begin Fall 2015
- Projected completion prior to summer 2016

| FUND | BUDGET | COST TO DATE |
|---|---|---|
| Prepayment | N/A | N/A |
| Appropriated | $7,000,000 | $5,730,933 |
| **TOTAL** | **$7,000,000** | **$5,730,933** |

***New Mead KU2B Transformer in Place at Mead Substation***




*Conceptual design for two transformer configuration at Mead Substation*

## 4.5 Mead Substation CCVT Support Structure Replacement (Stage 15)

This project is managed as part of Mead Substation Stage 15 and was included in the design and specification of Mead Substation Stage 15. This optimizes outage co-ordination, contractor operations, and Western management of all of the work performed at Mead. This portion of the contract replaces a total of 27 concrete 230kV CT and CCVT support stands with galvanized steel stands. Mead Substation currently utilizes concrete stands to support the majority of the CT's and CCVT's throughout the substation. There are currently 27 stands in the 230kV yard depicting extensive cracking, expansion, and spalling. Several have deteriorated to the point of which internal steel structure is exposed. This project is replacing the existing supports before the structural integrity is completely diminished, thus causing significant damage to station equipment and system interruption.

Project Status

- Construction specification complete
- Construction contract award before the end of FY15
- Projected completion: June 2016

| FUND | BUDGET | COST TO DATE |
|---|---|---|
| Prepayment | $975,000 | $757,953 |
| Appropriated | $49,254 | $0 |
| **TOTAL** | **$1,024,254** | **$757,953** |

***Existing CCVT Support Scheduled for Replacement***

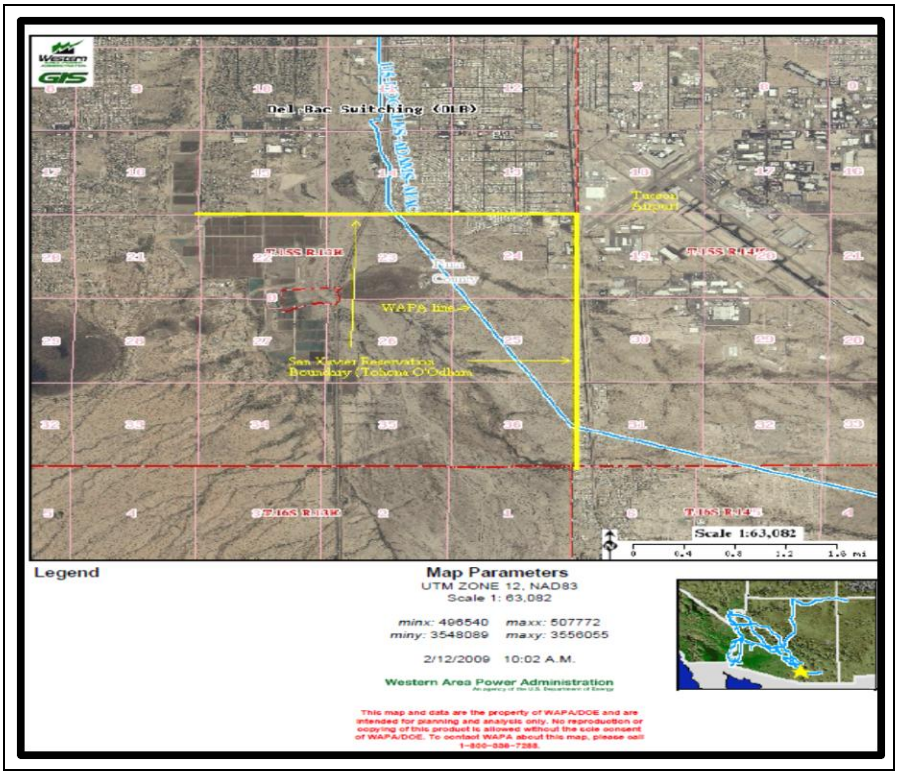
## 4.6 Del Bac-Nogales Right-of-Way Renewal

The purpose of this project is to renew the right-of-way agreement for a portion of the 115kV transmission line that crosses the Tohono O'odham tribal property between Del Bac and Nogales Substations. Western has a 115kV line that crosses approximately 4.5 miles of the Tohono O'odham tribal land south of Tucson. The right-of-way agreement for this portion of the line expired in 2009. In order to keep the line in its present location, and to properly maintain it, a new ROW agreement between Western and the Tohono O'odham is required. Western's Land's Department is negotiating a new 50-year agreement with the tribe. The 50-year agreement will commence from the time of expiration in 2009.

Project Status

- Currently in negotiations with Tohono O'odham Tribe

| FUND | BUDGET | COST TO DATE |
|---|---|---|
| Prepayment | $3,550,000 | $0 |
| Appropriated | $50,000 | $27,856 |
| **TOTAL** | **$3,600,000** | **$27,856** |



## 4.7 Mead Spare Transformer (Liberty KU1A to Mead)

The existing Mead KU2A transformer was constructed in 1964 and started showing signs of degradation approximately seven years ago. In conjunction with Mead Stages 14 & 15, Western took action to mitigate the risk of a potential Mead KU2A transformer failure. Risk mitigation alternatives were identified and from that process it was determined that the compatible Liberty KU1A transformer would be moved and staged at the Mead Substation. The spare KU1A transformer will be prepared for service and used in the event of an emergency related to the failure of the existing KU2A transformer.

Project Status

- Transformer relocation contract awarded: May 2015
- Projected completion: September 2015

| FUND | BUDGET | COST TO DATE |
|---|---|---|
| Prepayment | N/A | N/A |
| Appropriated | $800,000 | $456,231 |
| **TOTAL** | **$800,000** | **$456,231** |


***Liberty KU1A Transformer***

## 4.8 Gila Substation 161kV to 230kV Rebuild

This project will completely rebuild the Gila 161kV Substation to 230kV standard and re-use the existing 161kV transformers. The rebuild will be on Western owned land adjacent to the existing Substation. In addition to the rebuild, a new control building will be built large enough to accommodate the future rebuild of the 69kV and 34.5kV yards. Gila Substation (161kV, 69kV, 34.5kV and 4.16kV) was originally constructed in 1949. The rebuild of this Substation will increase reliability and will also replace aged components that have become unreliable and a detriment to Western's System. In 1949, when the Substation was originally built, safe working and minimum approach distances were considerably less than today's standards. The rebuild to current day standards will increase worker safety and lessen the possibility of equipment flashover and failure.

Project Status

- Specification & drawings to Procurement: August 2015
- Construction expected to start: January 2016
- Projected completion: 2nd quarter 2017

| FUND | BUDGET | COST TO DATE |
|---|---|---|
| Prepayment | $12,000,000 | $1,546,944 |
| Appropriated | $900,000 | $154,316 |
| **TOTAL** | **$12,900,000** | **$1,701,260** |

***Existing Gila 161kV Yard***

## 4.9 Parker Substation 161kV Switch Replacement (ON HOLD)

Project consists of replacing twelve 161kV switches two with grounding switches in Bays 5, 7, 8, and 12 at Parker Substation. The switches at the Parker Substation are 50-plus-years-old and have become difficult to operate. Routine maintenance has been performed, however because of their age and the normal degradation, these switches have become unreliable and pose a potential safety hazard to maintenance personnel. Additionally, their unreliability can prolong outages and create an uncertainty to systems operations.

After further evaluation of this project as well as others at Parker Substation, it was determined that a total evaluation and study was needed for Parker Substation. Consequently, this project has been placed on hold until the total evaluation process is complete.

Project Status

- Project is currently on hold

| FUND | BUDGET | COST TO DATE |
|---|---|---|
| Prepayment | $1,250,000 | $23,573 |
| Appropriated | $1,043,656 | $1,043,656 |
| **TOTAL** | **$2,293,656** | **$1,067,229** |

***Parker 161 kV Yard***

## 4.10 Mesa Substation Remediation

Complete the demolition and clean-up of Western's former 9.2 acre Mesa Substation, and prepare it for sale as surplus land. The substation, which is located in a highly populated residential area, has been de-commissioned. All yard equipment and support structures have been removed; but buildings, concrete foundation, and underground oil piping have been left in place. Preliminary environmental surveys indicated the presence of asbestos and PCB-contaminated oil. Further investigation uncovered higher level contaminants which prompted Western to re-evaluate the project remediation scope, demolition scope, and associated project cost for the residential level of remediation work required. Western is seeking additional funding in the amount of $2,510,000 to address the known contamination levels and comply with the Arizona Environmental Regulator (ADEQ) for compliance and full remediation. Continued remediation delay could increase Western's liability and increases the potential for contamination to spread beyond the site; significantly increasing clean-up costs.

Project Status

- Environmental assessment completed in Fall 2014
- Additional $2,510,000 in funding is required
- FY15 approved prepayment amount $1,025,000

| FUND | BUDGET | COST TO DATE |
|---|---|---|
| Prepayment | $1,025,000 | $96,310 |
| Appropriated | $221,216 | $221,216 |
| **TOTAL** | **$1,246,216** | **$317,526** |

***Mesa Substation***

## 4.11 Tucson Substation Rebuild (ON HOLD)

This project will completely rebuild the 115kV substation located in Tucson. Land within the existing Substation fence will be utilized to construct the new Substation prior to the demolition of the old. Many of the components are 1950's vintage and have exceeded their normal operating life. This Substation contains the breaker with the worst condition in DSW as indicated by the recent Asset Management assessment. There is also a considerable amount of environmental clean-up required. DSW is currently evaluating the regional needs and performing a study to further investigate the upgrade of Tucson Substation.

Project Status (ON HOLD)

- Construction specification complete
- Breakers, Switches, and CT's ordered
- Construction contract solicitation on hold

| FUND | BUDGET | COST TO DATE |
|---|---|---|
| Prepayment | $7,000,000 | $518,850 |
| Appropriated | $1,750,000 | $1,547,000 |
| **TOTAL** | **$8,750,000** | **$2,065,850** |

***Existing Tucson Substation and land where the new station will be built.***

## 4.12 Facility Ratings Mitigation Year 3 (ON HOLD)

DSW NERC, Year 3 facility ratings mitigation, low priority consists of a total of 939 miles of lines which have been LiDAR surveyed, resulting in 499 potential violations. Field verification identified that 151 violations required an engineering/design solution. The mitigation of these violations on each line segment requires the solicitation of a construction contract. This project will require significant outage co-ordination and most likely will be built over two construction seasons. The following is a list of line segments and the number of violations on each line segment requiring a design solution to mitigate the violation:

| Line Segment | No. of Violations | Line Segment | No. Of Violations |
|---|---|---|---|
| Parker-Bouse | 40 | Coolidge – ED2 #2 | 2 |
| Bouse-Kofa | 139 | Coolidge – ED2 #1 | 1 |
| Kofa-Dome Tap | 9 | Coolidge – Rogers | 1 |
| Gila-Dome Tap | 9 | Coolidge – Valley Farms | 2 |
| Gila Welton Mohawk | 6 | ED5 – Saguaro | 1 |
| Gila -Knob | 2 | Oracle – Tucson | 1 |
| Blythe-Gold Mine Tap | 5 | Test Track Casa Grande | 1 |
| Headgate Rock-Blythe | 8 | Valley Farms – Oracle | 3 |
| Parker-Blythe | 5 | ED5 – Saguaro #2 | 1 |
| Parker-Headgate Rock | 9 | Test Track – Casa Grande | 1 |
| Gold Mine Tap Sub-Knob | 4 | Valley Farms - Oracle | 3 |
| Bouse Hills-Harcuvar | Complete | Pinnacle Peak - Rodgers | 1 |

NERC has issued an order that all Transmission Operators will verify all lines of 100kV or higher are in compliance with the NESC. This was investigated due to a tree caused outages throughout the United States. The order allowed the Operator to establish high (Year 1), medium (Year 2) and low (Year 3) priorities. These priorities were mostly driven by voltage class, 500kV and 345kV high, 230kV medium and 161kV and 115kV low. After each priority has been surveyed, NERC requires a report of the findings and a mitigation plan for the deficiencies.

Project Status (ON HOLD)

- Project is currently on hold until the completion of the South of Phoenix and South of Parker regional studies (Analysis of Alternatives).

| FUND | BUDGET | COST TO DATE |
|---|---|---|
| Prepayment | $16,000,000 | $141,763 |
| Appropriated | $900,000 | $0 |
| **TOTAL** | **$16,900,000** | **$141,763** |

## 4.13 Parker-Headgate Rock & Parker-Bouse 161kV Transmission Line Reroute

This transmission line re-route project consists of replacing the existing line from Parker to Headgate Rock, part of the Parker to Blythe system, and from Parker to Bouse, part of the Parker to Gila system. The rebuild will upgrade the existing wooden pole structures that are currently showing signs of advanced degradation and require replacement.

A new 230kV transmission system will replace the existing 161kV circuits and be operated initially as a 161kV system. The two circuits will be strung on the same structure shortly after departing from the Parker Substation for the proposed alignment on the California side of the Colorado River. Once across the river, single-circuit transmission lines will be constructed southeast to connect with the existing Parker-Bouse circuit, and southwest to Headgate Rock Substation. The new line will be double-circuit, steel monopoles, with 1272 ACSS wire.

Project Status

- Project will be executed to complete design and specification only. Construction phase will be on hold until the FY16 South of Parker Study is complete
- Route has been established, preliminary design is in review

| FUND | BUDGET | COST TO DATE |
|---|---|---|
| Prepayment | $17,954,000 | $349,874 |
| Appropriated | $1,241,249 | $738,991 |
| **TOTAL** | **$19,195,249** | **$1,088,865** |

***Existing Headgate-Parker 161kV Transmission lines***

# 5. FY16 Proposed New Projects

## 5.1 Proposed Prepayment Funding Request

| PROJECT | CONCEPTUAL BUDGET |
|---|---|
| Crossman Peak Microwave Facility | $4,525,000 |
| Liberty Series Capacitor Bank | $10,372,000 |
| Additional Funding -Mesa Substation Remediation | $2,510,000 |
| **TOTAL FY16 Prepayment Conceptual Budget** | $17,407,000 |

## 5.2 Crossman Peak Microwave Facility

Project Description

This project will construct a new Western-owned microwave communication site on Crossman Peak. Crossman Peak is located east of Lake Havasu City. The new site will support the primary microwave communications between Phoenix and Hoover, between Western's existing Christmas Tree Pass and Metal Mountain communication sites. This project will include the land, equipment shelter, a transmission tower, backup generator with fuel tanks, a distribution power line for primary power, and an access easement.

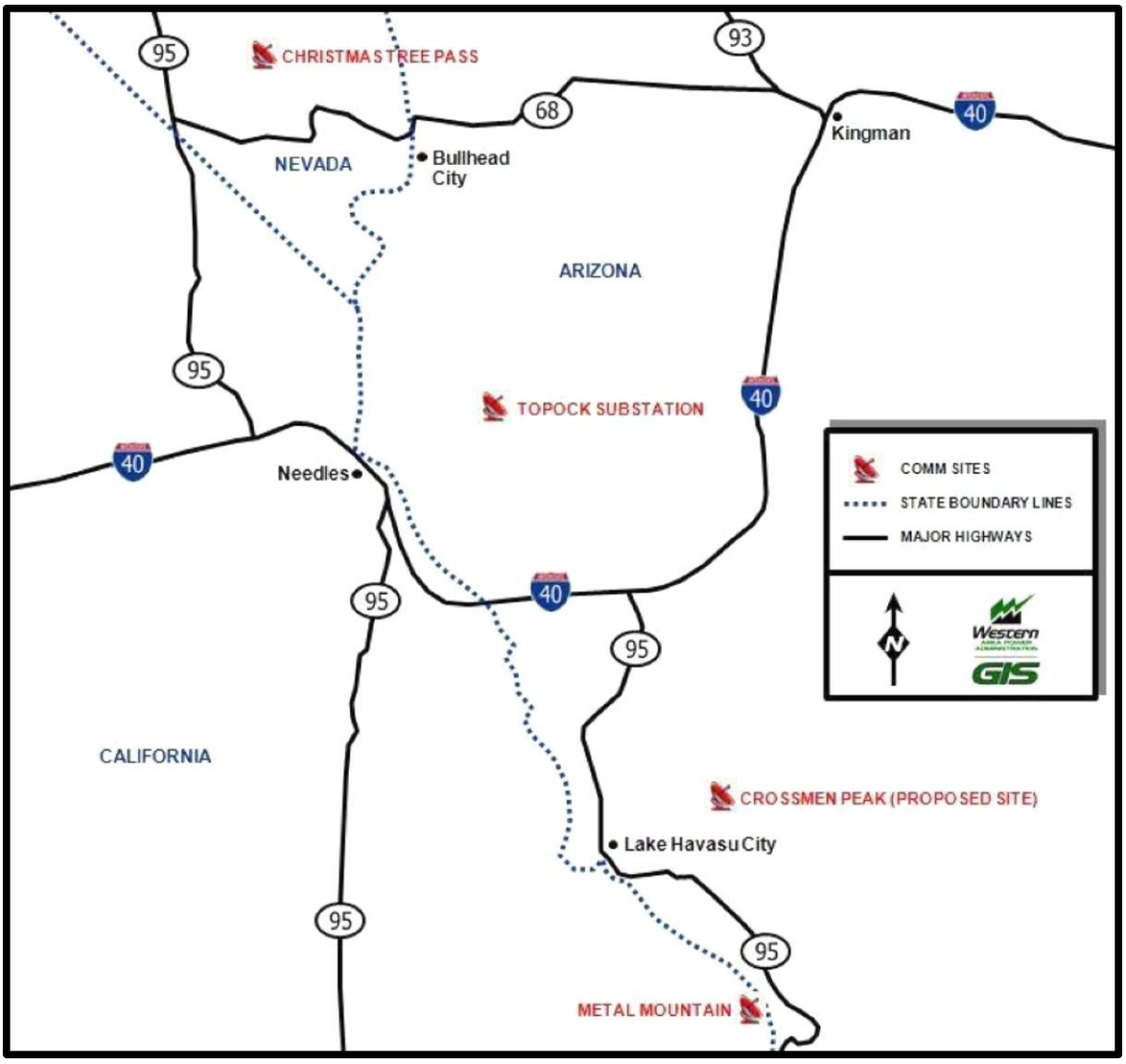
Justification for Project

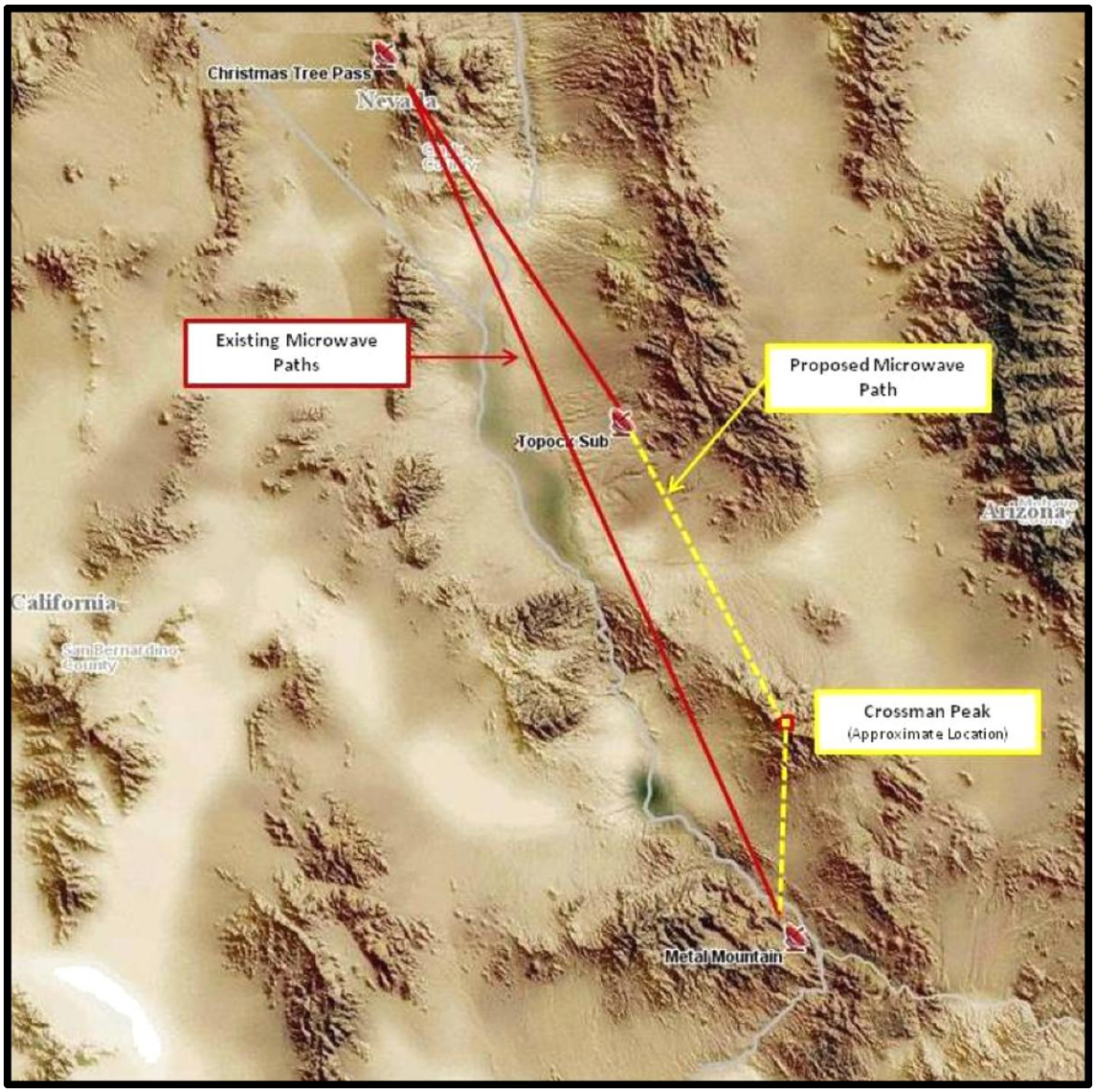
The Western microwave system operates within a specific frequency band (2GHz) regulated by the Federal Communications Commission. Legislation was presented in 2010 that reallocates this frequency band to a higher bandwidth range (7GHz). As a result, radios along Western's microwave system will require replacement to models that operate within the higher frequency range in order to accommodate this FCC mandate. At this time, Western is currently upgrading the microwave backbone to a higher bandwidth. Due to the distance between the two sites (70 miles), obstructions interfering with the current path, moving to the new frequency bandwidth, and the upgrade in bandwidth, the existing microwave path no longer provides the required 5-9's of reliability. This compelled Western to look for a new site that would provide the required reliability. The new path to bypass the source of interruption in the higher frequency band will be from Christmas Tree Pass, to Crossman Peak, to Metal Mountain.

Extensive efforts went into finding an existing site that would be suitable and provide the reliability needed. No other site was found. The current interim sites do not meet the required Western and NERC standards for a reliable and secure communication. Additionally, the microwave system is the primary means of communication for all of the transmission lines between Mead Substation and Phoenix, encompassing five generation sites and 22 substations. This new site will ensure Western's ability to meet all relevant operational and security standards, as well as meeting Western's own communication needs.

Conceptual Budget

$4,525,000






## 5.3 Liberty Series Capacitor Bank

Project Description

Liberty Substation is a large facility operating at 345/230kV near Buckeye, AZ which is part of the Intertie, Parker-Davis, Navajo, and CAP projects. The substation feeds multiple regional utilities. A Westinghouse Capacitor Bank (PU1A) was installed on this transmission line in 1969, in order to compensate for voltage variations, due to the length of the line. The series capacitor bank is made up of capacitor cans, a control system, air compressor, air dryer, air piping system, inserting circuit breaker, relaying, surge arrestors and reactors.

During construction, the current capacitor bank would remain intact while the new equipment would be installed north of the existing devices, minimizing outage impacts. This project phase would construct the new series capacitor bank with support structures, and demolish and dispose of the old equipment. The existing capacitor cans do not contain any PCBs. There are no known environmental contaminates related to the existing capacitor equipment. No environmental remediation will take place in this phase.

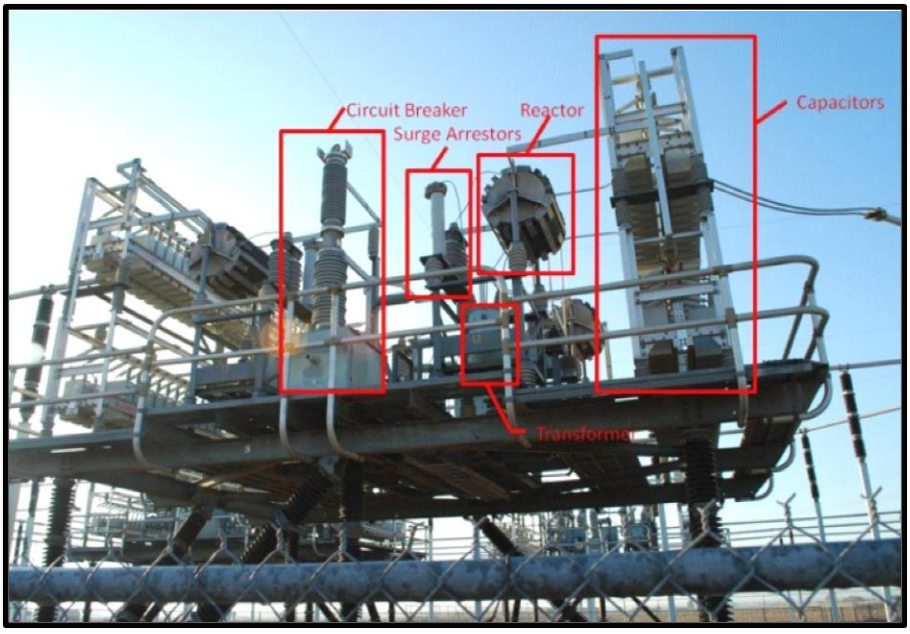
## Justification for Project

The existing capacitor bank is currently being controlled by an outdated, badly deteriorated, unsupported pneumatic control system. Maintenance costs are steadily increasing at approximately five times the expected costs. This is due, in part to a lack of replacement parts for the outdated pneumatic system and the high cost in fabricating custom parts when replacements are not available. The high frequency of maintenance issues and the escalating demand of repair labor is driving the increased cost.

In addition, the potential de-rating of the transmission line due to capacitor bank failure may expose Western's customers to the additional costs incurred by securing alternative power paths. If the capacitor bank in the Liberty (LIB)-Peacock(PCK) Transmission Line is not operational, Western's customers could incur high costs until a replacement is in place. As a result the LIB-PCK line would be de-rated from 450 MVA to 300 MVA if the capacitor bank went out of service.

## Conceptual Budget

$10,372,000




***Existing PU1A Series Capacitor Bank at Liberty Substation***

# 6. Retirements, Replacements, Additions, & Deletions

## 6.1 Overview

Retirements, Replacements, Additions, & Deletions (RRAD's) projects are typically completed in less than one year, and primarily rely on Federal labor to complete. Minimal design is required, and most of the material required is industry standard and easily attainable. RRAD's projects are completed using existing Western personnel, and do not usually require contracted labor (refer to the Appendices for the RRAD's projects listing.). There are exceptions to this; all construction no matter the value or labor requirement in Boulder Canyon, CRSP, CAP, Levee, and Salinity are accounted for in the RADD's program.

## 6.2 RRAD's Budget

| Power System | Boulder Canyon | CAP | CRSP | Intertie | Parker-Davis | Salinity | Levee |
|---|---|---|---|---|---|---|---|
| **FY15 Executed (As of 6-30-2015)** | $159,741 | $5,615,067 | $1,703,021 | $1,494,647 | $7,461,507 | $155,681 | $57,345 |
| **FY16** | $860,000 | $5,430,000 | $4,765,000 | $4,015,000 | $6,868,000 | $175,000 | $3,550,000 |
| **FY17** | $400,000 | $3,700,000 | $5,325,000 | $3,200,000 | $7,522,000 | $0 | $1,383,000 |
| **FY18** | $400,000 | $400,000 | $1,865,000 | $3,415,000 | $7,104,000 | $0 | $0 |
| **FY19** | $400,000 | $400,000 | $1,065,000 | $2,840,000 | $7,076,238 | $0 | $0 |
| **FY20** | $400,000 | $400,000 | $865,000 | $2,840,000 | $6,711,497 | $0 | $0 |

## 6.3 RRAD's FY15 Funds Executed By Power System (>$200,000)

**As of 6/30/15*

***Central Arizona Project (CAP)***

- ED2-Saguaro #2 115kV Rebuild
  $ 5,561,871

***Colorado River Storage Project (CRSP)***

- Glen Canyon Substation 230/69kV Transformer Addition
  $ 1,452,207

***Intertie Project***

- Mead-Phoenix 500kV Capital Improvements (Spacer Dampers)
  $950,000

***Parker-Davis Project***

- Griffith/Hilltop/McCONNICO/Peacock - Optical Mux Replacements
  $219,147
- Wood Pole Replacement
  $1,967,120
- Movable Equipment
  $3,666,764

## 6.4 RRADs Projects by Power System for FY16 (>$200,000)

***Boulder Canyon Project***

- Hoover Mead 1-8 Jumper Replacement.....$800,000

***Central Arizona Project (CAP)***

- ED2-Saguaro 115kV Transmission Line Rebuild (portion).....$4,480,000
- Facility Ratings Mitigation Year 2.....$950,000

***Colorado River Storage Project (CRSP)***

- Pinnacle Peak-Rogers Replacement of FX Capacitor Maintenance Breakers.....$300,000
- Pinnacle Peak 230kV Disconnect Replacements Bays 23 and 33.....$300,000
- Mingus Mt. Communication Building Replacement.....$400,000
- Glen Canyon-Flagstaff Facility Rating Mitigation Third Year.....$500,000
- Pinnacle Peak/Rogers Install Double-Circuit Inset Structure Lines 1 & 2.....$500,000
- Flagstaff/Pinnacle Peak /Glen Canyon Physical Security Enhancement Program.....$345,000
- Glen Canyon -Shiprock Reactors.....$1,850,000

***Intertie Project***

- Mead/Peacock/Liberty Physical Security Equipment.....$245,000
- Mead Substation Road Rebuild.....$750,000
- Mead-Phoenix 500kV Line.....$1,500,000
- Mead Substation Domestic Water Main Replacement.....$1,025,000

***Parker-Davis Project***

- PHS SCADA Hardware/Software.....$300,000
- Disconnects Replacements (various).....$200,000
- Coolidge RTU Replacements.....$200,000
- Phoenix/Blythe/Parker/Davis/Coolidge/Liberty Physical Security.....$700,000
- Wood Pole Replacement.....$3,000,000
- Griffith/Hilltop/McCONNICO Optical Mux.....$222,000
- 115kV Breaker Tucson.....$200,000

***Levee Project***

- Gila-North Gila 69kV Transmission Line Upgrades.....$550,000
- Gila-Gila Valley Laterals Rebuild.....$3,000,000

# 7. Transmission Asset Management


## 7.1 Program Overview

Western's Transmission Asset Management (TAM) has been tracking its assets since 1977; however in June 2011, the agency launched a formal project to examine its process to track, measure, and evaluate the condition of its infrastructure. The need to formalize the Asset Management Program was born out of three primary drivers:

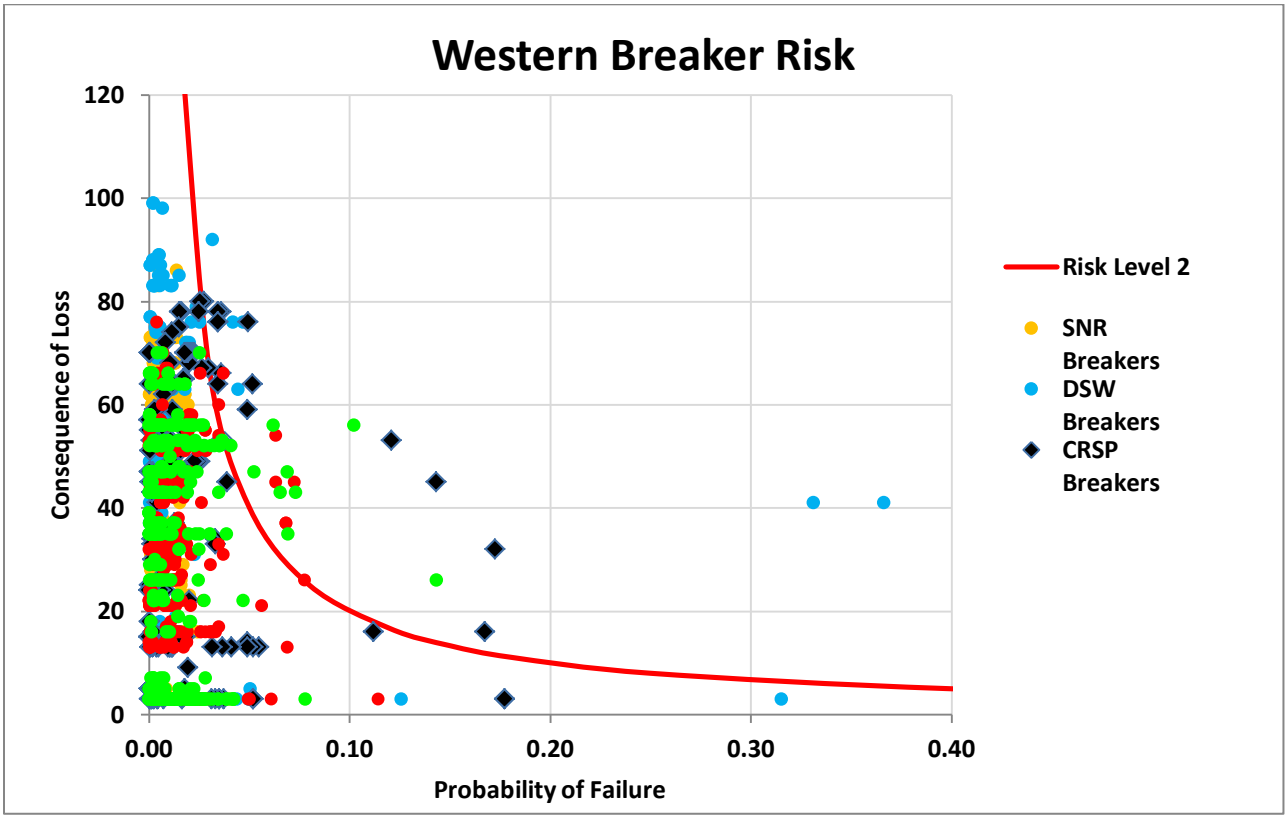
1. The current condition of aging assets.
2. The continued demand for increased capacity and reliability.
3. Prioritization of financial resources.

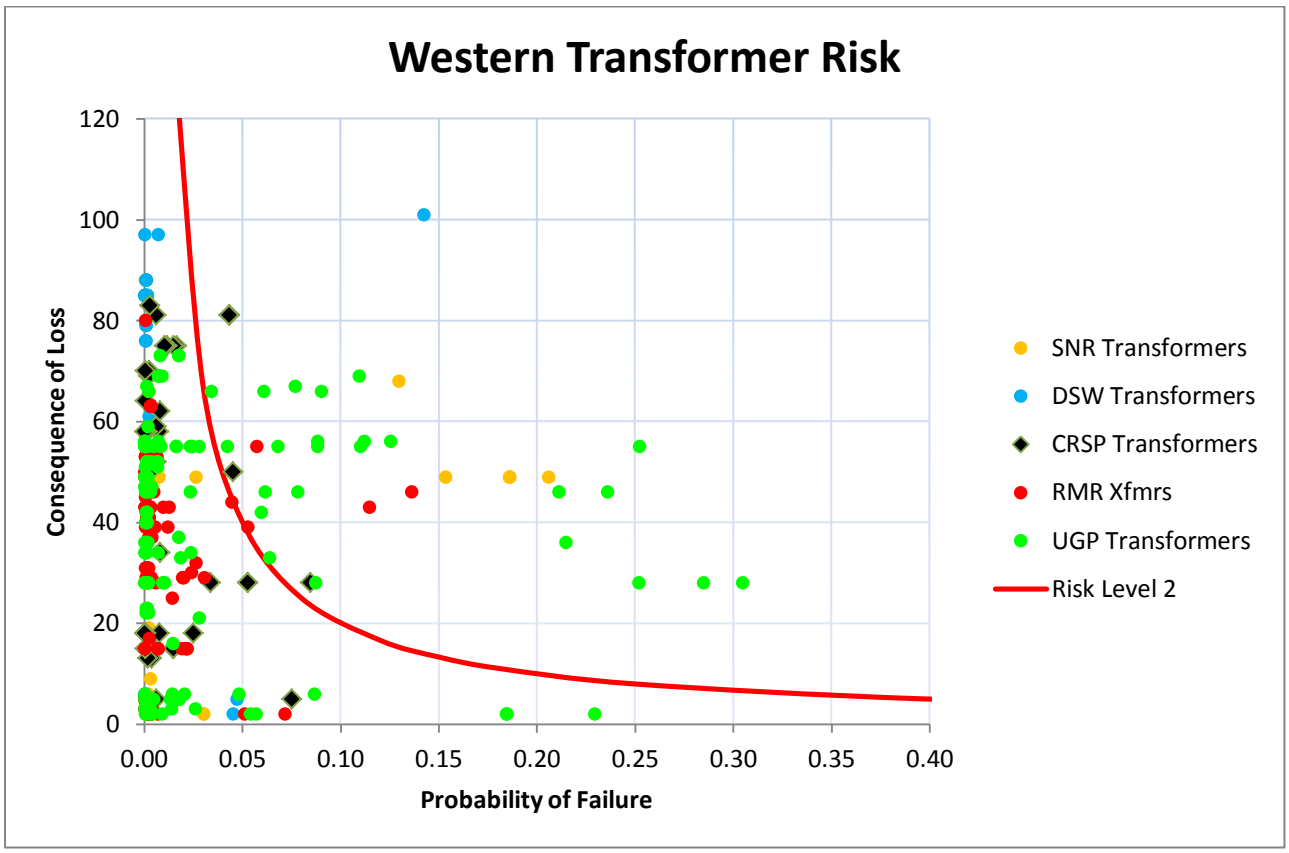
The TAM program focuses on improving how Western manages transmission assets by evaluating the asset's condition, and then identifying and quantifying any adverse consequences resulting from that asset's failure. This process will ensure that Western's future funding allocations are focused on fixing or replacing those assets that, upon failure, it will carry the most significant risk to the public, customers and employees.

Western's TAM program is in its second year of analysis on three critical elements in the system: circuit breakers, transformers, and transmission lines. The staff supporting TAM will begin assessing the operational condition of each critical asset in order to develop a Health Index (HI), a Probability of Failure (POF), and a Consequence of Failure (COF). Multiplying the POF times the COF yields the criticality or Risk Score for each asset. This risk score is used to develop a priority ranking of assets to receive funding in order to maintain or replace, as required.

On July 1, 2015, Western's Transmission Asset Management Program (TAM) ranked by Risk Score 1591 Power Circuit Breakers (100kV and above) and 351 Power Transformers (100kV and above). The following charts graphically display the Risk Scores for the Power Circuit Breakers and the Power Transformers Western-wide.

Asset Management

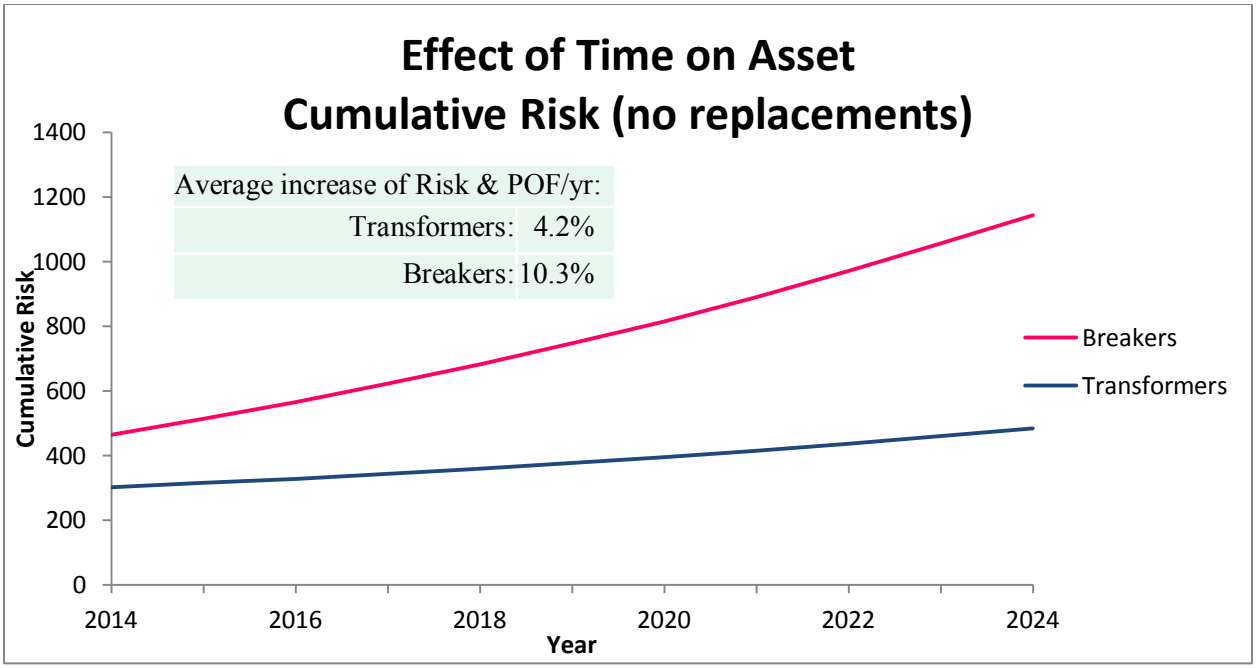





For Transmission Line Segments, Western's Asset Management system will incorporate tracking individual structures by condition, which will include wood pole strength, installed date, along with 21 other attributes, to determine an overall HI and POF. This information will be rolled up to the Transmission Line Segment level and used to determine the most critical segments.

A new transmission line inspection tool (CartoPac) was implemented Western-wide in early 2015. DSW has successfully completed four breaker-to-breaker transmission line section inspections. The results are being analyzed for criticality to be scheduled for maintenance, repair, or future replacements. The next phase of the CartoPac implementation is to leverage technology to link existing systems for better transmission line condition analysis.

TAM has developed a spreadsheet analysis tool to apply management's asset replacement strategy to the 2015 health and consequence results for breakers and transformers. This tool is called Western's Asset Risk Estimator (WARE). WARE will be used to determine the method and volume of replacements to maintain a constant overall risk level. The WARE analysis below shows the effect on Western's risk if no replacements were made.


Effect of Time on Asset
Cumulative Risk (no replacements)
Average increase of Risk & POF/yr:
Transformers: 4.2%
Breakers: 10.3%
Cumulative Risk
1400
1200
1000
800
600
400
200
0
2014
2016
2018
2020
2022
2024
Year
Breakers
Transformers

# 9. APPENDICES

## 8.1 DSW FY16-20 RRADS Program

| FY15 - FY25 DESERT SOUTHWEST RRADs PROGRAM | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| REF. NO. | PROJECT DESCRIPTION | LOCATIONS (FY15 ONLY) | ORG | FY15 APPROVED BUDGET | FY16 BUDGET SUBMISSION | FY17 BUDGET SUBMISSION | FY18 BUDGET PLAN | FY19 BUDGET PLAN | FY20 BUDGET PLAN |
| | | | | **BOULDER CANYON** | | | | | |
| 1 | Transformer Relay Replacements | MED B | G53 | $140,000 | $60,000 | $0 | $0 | $0 | $0 |
| | **G5300 TOTALS** | | | **$140,000** | **$60,000** | **$0** | **$0** | **$0** | **$0** |
| 2 | Hoover- Mead 1 thru 8 Jumper Replacement | HVR/MED | G56 | $0 | $800,000 | $0 | $0 | $0 | $0 |
| | **G5600 TOTALS** | | | **$0** | **$800,000** | **$0** | **$0** | **$0** | **$0** |
| 3 | Outyear projects - TBD | TBD | | $0 | $0 | $400,000 | $400,000 | $400,000 | $400,000 |
| | **BOULDER CANYON TOTALS** | | | **$140,000** | **$860,000** | **$400,000** | **$400,000** | **$400,000** | **$400,000** |
| | | | | | | | | | |
| | | | | **CENTRAL ARIZONA PROJECT** | | | | | |
| 1 | Outyear projects -TBD | TBD | G52 | $0 | $0 | $0 | $200,000 | $200,000 | $200,000 |
| | **G5200 TOTALS** | | | **$0** | **$0** | **$0** | **$200,000** | **$200,000** | **$200,000** |
| 2 | Outyear projects -TBD | TBD | G53 | $0 | $0 | $200,000 | $200,000 | $200,000 | $200,000 |
| | **G5300 TOTALS** | | | **$0** | **$0** | **$200,000** | **$200,000** | **$200,000** | **$200,000** |
| 3 | Facility Rating Mitigation Second Year | BMA/TOP | G56 | $950,000 | $950,000 | $0 | $0 | $0 | $0 |
| 4 | Transmission Line Replacement | ED2SGR2 | G56 | $6,600,000 | $4,480,000 | $3,500,000 | $0 | $0 | $0 |
| | **G5600 TOTALS** | | | **$7,550,000** | **$5,430,000** | **$3,500,000** | **$0** | **$0** | **$0** |
| | **CAP TOTALS** | | | **$7,550,000** | **$5,430,000** | **$3,700,000** | **$400,000** | **$400,000** | **$400,000** |
| | | | | | | | | | |
| | | | | **COLORADO RIVER STORAGE PROJECT** | | | | | |
| 1 | Test Equipment | MOVP | G52 | $0 | $65,000 | $60,000 | $60,000 | $60,000 | $60,000 |
| 2 | 230kV Disconnect Replacements Bays 23 and 33 | PPK | G52 | $120,000 | $300,000 | $350,000 | $0 | $0 | $0 |
| 3 | Transformer Replacements | PPK | G52 | $0 | $160,000 | $0 | $0 | $0 | $0 |
| 4 | Replacement of FX Capacitor Maintenance Breakers | PPK/RGS | G52 | $250,000 | $300,000 | $350,000 | $350,000 | $0 | $0 |
| | **G5200 TOTALS** | | | **$370,000** | **$825,000** | **$760,000** | **$410,000** | **$60,000** | **$60,000** |
| 5 | Communication Building Replacement | MGS | G53 | $0 | $400,000 | $0 | $0 | $0 | $0 |
| 6 | Comm Site Grounding and Tower Inspections | TBD | G53 | $0 | $120,000 | $0 | $120,000 | $120,000 | $120,000 |
| 7 | Communication Site Security | TBD | G53 | $0 | $70,000 | $0 | $0 | $0 | $0 |
| 8 | Comm Site Powerline Repairs | GC | G53 | $0 | $100,000 | $0 | $0 | $0 | $0 |
| 9 | RTU Replacements | ELD/CAN | G53 | $0 | $0 | $85,000 | $0 | $0 | $0 |
| 10 | Fiber Optic Installation [Full Path, 22 Miles] | GPK/PRS | G53 | $0 | $0 | $880,000 | $0 | $0 | $0 |
| 11 | Meter Program | TBD | G53 | $0 | $0 | $100,000 | $100,000 | $100,000 | $100,000 |
| 12 | PRC-002-2 DME Upgrades | TBD | G53 | $0 | $0 | $200,000 | $200,000 | $200,000 | $200,000 |
| 13 | Relay Replacements | TBD | G53 | $0 | $0 | $300,000 | $300,000 | $300,000 | $300,000 |
| 14 | RTU Replacements | PSM/GCS | G53 | $0 | $0 | $0 | $85,000 | $85,000 | $85,000 |
| | **G5300 TOTALS** | | | **$0** | **$690,000** | **$1,565,000** | **$805,000** | **$805,000** | **$805,000** |
| 15 | 230/69kV-50 MVA Transformer | GC | G56 | $3,300,000 | $50,000 | $0 | $0 | $0 | $0 |
| 16 | Facility Rating Mitigation Third Year | GC-FLG | G56 | $1,095 | $500,000 | $0 | $0 | $0 | $0 |
| 17 | Pave Entrance Road to Gate at Substation | GC | G56 | $125,000 | $5,000 | $0 | $0 | $0 | $0 |
| 18 | Install Double Circuit Inset Structure Lines 1 & 2 | PPK/RGS | G56 | $0 | $500,000 | $0 | $0 | $0 | $0 |
| 19 | KV2D 24/4-Kv Transformer Replacement | GC | G56 | $0 | $0 | $0 | $500,000 | $200,000 | $0 |
| 20 | Physical Security Enhancement Program | FLG/PPK/GC | G56 | $10,000 | $345,000 | $1,000,000 | $0 | $0 | $0 |
| 21 | Glen Canyon to Shiprock 60Mvar 230KV Reactors | GC/KAY/LHV | G56 | $0 | $1,850,000 | $2,000,000 | $150,000 | $0 | $0 |
| | **G5600 TOTALS** | | | **$3,436,095** | **$3,250,000** | **$3,000,000** | **$650,000** | **$200,000** | **$0** |
| | **CRSP TOTALS** | | | **$3,806,095** | **$4,765,000** | **$5,325,000** | **$1,865,000** | **$1,065,000** | **$865,000** |
| | | | | | | | | | |
| | | | | **INTERTIE** | | | | | |
| 1 | Instrument Transformers | MED | G52 | $0 | $100,000 | $80,000 | $80,000 | $80,000 | $80,000 |
| 2 | Test Equipment | MOVP | G52 | $0 | $40,000 | $40,000 | $40,000 | $40,000 | $40,000 |
| 3 | Breaker Replacement 1582 | LIB | G52 | $140,000 | $5,000 | $0 | $0 | $0 | $0 |
| 4 | Sub Equipment Replacements - General | | | | $0 | $0 | $220,000 | $220,000 | $220,000 |
| | **G5200 TOTALS** | | | **$140,000** | **$145,000** | **$120,000** | **$340,000** | **$340,000** | **$340,000** |
| 5 | Capacitor Bank and Bus Differential | LIB | G53 | $0 | $130,000 | $0 | $0 | $0 | $0 |
| 6 | Basler Relay Replacements | MED | G53 | $170,000 | $90,000 | $0 | $0 | $0 | $0 |
| 7 | Communication Site Security | TBD | G53 | $0 | $70,000 | $0 | $0 | $0 | $0 |
| 8 | Transformer Relay Replacements | TBD | G53 | $0 | $60,000 | $300,000 | $300,000 | $300,000 | $300,000 |
| 9 | Meter Program | TBD | G53 | $0 | $0 | $100,000 | $0 | $0 | $0 |
| 10 | PRC-002-2 DME Upgrades | TBD | G53 | $0 | $0 | $100,000 | $0 | $0 | $0 |
| 11 | WIN/CIP | TBD | G53 | $0 | $0 | $30,000 | $100,000 | $100,000 | $100,000 |
| 12 | Misc. Communications Facilities Replacement | | G53 | | $0 | $0 | $100,000 | $100,000 | $100,000 |
| 13 | Protective Relay Replacements Program | | | | | | $300,000 | $300,000 | $300,000 |
| 14 | Sub Equipment Replacements - General | | | | $0 | $0 | $200,000 | $200,000 | $200,000 |
| | **G5300 TOTALS** | | | **$170,000** | **$350,000** | **$530,000** | **$1,000,000** | **$1,000,000** | **$1,000,000** |
| 15 | Mead Substation Road Rebuild | MED | G56 | $0 | $750,000 | $0 | $0 | $0 | $0 |
| 16 | Physical Security Upgrade | MED/PCK/LIB | G56 | $41,000 | $245,000 | $1,000,000 | $0 | $0 | $0 |
| 17 | Cap Bank - PU1A | LIB | G56 | $0 | $0 | $50,000 | $0 | $0 | $0 |
| 18 | Liberty Substation Outer Fence | LIB | G56 | $0 | $0 | $0 | $575,000 | | |
| 19 | Mead Substation Domestic Water Main Replacement | MED | G56 | $0 | $1,025,000 | $0 | $0 | $0 | $0 |
| | **G5600 TOTALS** | | | **$41,000** | **$2,020,000** | **$1,050,000** | **$575,000** | **$0** | **$0** |
| 20 | Mead Phoenix 500kV Line | MED/PHX | G61 | $1,300,000 | $1,500,000 | $1,500,000 | $1,500,000 | $1,500,000 | $1,500,000 |
| | **G6100 TOTALS** | | | **$1,300,000** | **$1,500,000** | **$1,500,000** | **$1,500,000** | **$1,500,000** | **$1,500,000** |
| | **INTERTIE TOTALS** | | | **$1,651,000** | **$4,015,000** | **$3,200,000** | **$3,415,000** | **$2,840,000** | **$2,840,000** |

| REF. NO. | PROJECT DESCRIPTION | LOCATIONS (FY15 ONLY) | ORG | FY15 APPROVED BUDGET | FY16 BUDGET SUBMISSION | FY17 BUDGET SUBMISSION | FY18 BUDGET PLAN | FY19 BUDGET PLAN | FY20 BUDGET PLAN |
|---|---|---|---|---|---|---|---|---|---|
| FY15 - FY25 DESERT SOUTHWEST RRADs PROGRAM | | | | | | | | | |
| REF. NO. | PROJECT DESCRIPTION | LOCATIONS (FY15 ONLY) | ORG | FY15 APPROVED BUDGET | FY16 BUDGET SUBMISSION | FY17 BUDGET SUBMISSION | FY18 BUDGET PLAN | FY19 BUDGET PLAN | FY20 BUDGET PLAN |
| | | | | LEVEE | | | | | |
| 1 | Gila-Gila Valley Lateral Rebuilds | GLA/GLA | G56 | $200,000 | $3,000,000 | $0 | $0 | $0 | $0 |
| 2 | Gila-North Gila-Senator Wash 69kV Rebuild | GLA/NGA/SEW | G56 | $25,000 | $550,000 | $1,383,000 | $0 | $0 | $0 |
| | **G5600 TOALS** | | | **$225,000** | **$3,550,000** | **$1,383,000** | **$0** | **$0** | **$0** |
| | **LEVEE TOTALS** | | | **$225,000** | **$3,550,000** | **$1,383,000** | **$0** | **$0** | **$0** |
| | | | | | | | | | |
| | | | | PARKER DAVIS | | | | | |
| 1 | SCADA Hardware/Software | PHS | J26 | $350,000 | $300,000 | $350,000 | $300,000 | $300,000 | $300,000 |
| | **J2000 TOTALS** | | | **$350,000** | **$300,000** | **$350,000** | **$300,000** | **$300,000** | **$300,000** |
| 2 | Seal Coat/Crack APO Parking Lot | PHS | G10 | $0 | $16,000 | $0 | $0 | $0 | $0 |
| 3 | Replace Cooling Tower Fans | PHS | G10 | $0 | $55,000 | $0 | $0 | $0 | $0 |
| 4 | Replace HVAC Units for Warehouse | PHS | G10 | $0 | $50,000 | $0 | $0 | $0 | $0 |
| 5 | Fitness Center Shower Hot Water Heaters | PHS | G10 | $0 | $35,000 | $0 | $0 | $0 | $0 |
| 6 | Covered Parking Lighting | PHS | G10 | $0 | $100,000 | $0 | $0 | $0 | $0 |
| 7 | Roof Repairs - Phoenix Main Facility Building | PHS | G10 | $0 | $0 | $700,000 | $0 | $0 | $0 |
| 8 | Facility Project TBD | PHS | G10 | $0 | $0 | $0 | $500,000 | $500,000 | $500,000 |
| | **G1000 TOTALS** | | | **$0** | **$256,000** | **$700,000** | **$500,000** | **$500,000** | **$500,000** |
| 9 | San Replacement | MOVP | G20 | $214,000 | $0 | $0 | $0 | $0 | $273,124 |
| 10 | ASA 5501 and 5520 Firewall Replacement | MOVP | G20 | $0 | $0 | $42,000 | $189,000 | $198,450 | $208,373 |
| 11 | Expansion of Apcon Switch | MOVP | G20 | $0 | $0 | $30,000 | $0 | $0 | $0 |
| 12 | Tools for CIP V5 | MOVP | G20 | $0 | $0 | $108,000 | $0 | $0 | $0 |
| 13 | Replace Cisco 2821 (8) | MOVP | G20 | $40,000 | $54,000 | $0 | $0 | $0 | $0 |
| 14 | Replace Cisco 7206 (1) | MOVP | G20 | $96,000 | $96,000 | $0 | $0 | $0 | $0 |
| 15 | VMHW Servers Prod | MOVP | G20 | $0 | $0 | $0 | $40,000 | $0 | $0 |
| 16 | VMHW Servers QA | MOVP | G20 | $0 | $0 | $0 | $20,000 | $0 | $0 |
| 17 | Core Switch Upgrade | MOVP | G20 | $0 | $0 | $0 | $0 | $360,000 | $0 |
| 18 | Backup Library | MOVP | G20 | $0 | $0 | $0 | $0 | $94,500 | $0 |
| 19 | Raritan | MOVP | G20 | $0 | $0 | $0 | $0 | $38,288 | $0 |
| 20 | Wireless | MOVP | G20 | $30,000 | $30,000 | $0 | $0 | $0 | $0 |
| | **G2000 TOTALS** | | | **$380,000** | **$180,000** | **$180,000** | **$249,000** | **$691,238** | **$481,497** |
| 21 | Test Equipment | MOVP | G52 | $0 | $120,000 | $120,000 | $120,000 | $120,000 | $120,000 |
| 22 | Wood Pole Program (Locations only FY15) | ADA-APE, DLB-NGL, DLB-TUC, GLA-WMS | G52 | $1,971,867 | $3,000,000 | $1,700,000 | $3,000,000 | $3,000,000 | $3,000,000 |
| 23 | Instrument Transformer & Arrester Replacement Program | PHX | G52 | $0 | $100,000 | $80,000 | $0 | $0 | $0 |
| 24 | 115kV Curcuit Breaker Replacement | TUC | G52 | $83,500 | $200,000 | $0 | $0 | $0 | $0 |
| 25 | MOVP - TBD | MOVP | G52 | $0 | $0 | $0 | $340,000 | $340,000 | $340,000 |
| 26 | Disconnects Replacements | VAR | G52 | $0 | $200,000 | $0 | $0 | $0 | $0 |
| 27 | Bucket Truck (Replace 125ft Altec) | MOVP | G52 | $0 | $0 | $675,000 | $0 | $0 | $0 |
| 28 | 6X4 Tractor | MOVP | G52 | $160,560 | $0 | $200,000 | $0 | $0 | $0 |
| 29 | 230kV Breaker 586 | PAD | G52 | $0 | $0 | $160,000 | $200,000 | $0 | $0 |
| 30 | 230kV Breaker 1082 | PAD | G52 | $0 | $0 | $160,000 | $200,000 | $0 | $0 |
| 31 | Replace 954 AAC Jumpers at Nogales (currently rated at 165 MVA) with new rated at 171MVA | NGL | G52 | $0 | $0 | $30,000 | $0 | $0 | $0 |
| 32 | Replace Liberty switches 1081, 1083 1085 (637 MVA) with new rated at 797 MVA | LIB | G52 | $0 | $0 | $250,000 | $0 | $0 | $0 |
| 33 | Replace Oracle switches 661, 663, 665 (all currently rated at 120 MVA with new rated at 319MVA | ORA | G52 | $0 | $0 | $0 | $150,000 | $0 | $0 |
| | **G5200 TOTALS** | | | **$2,215,927** | **$3,620,000** | **$3,375,000** | **$4,010,000** | **$3,460,000** | **$3,460,000** |
| 34 | Test Equipment | MOVP | G53 | $55,000 | $100,000 | $100,000 | $100,000 | $100,000 | $100,000 |
| 35 | Misc. Communications Facilities Replacement | | G53 | | $0 | $0 | $0 | $0 | $725,000 |
| 36 | DCS Upgrades | GLA | G53 | $25,000 | $66,000 | $0 | $0 | $0 | $0 |
| 37 | Line Relay Replacements | HEN/MED | G53 | $0 | $66,000 | $0 | $0 | $0 | $0 |
| 38 | Optical Mux Replacements | GTH/HLT/MCI | G53 | $260,000 | $222,000 | $0 | $0 | $0 | $0 |
| 39 | Substation Relay Upgrades | ED2 | G53 | $200,000 | $60,000 | $0 | $0 | $0 | $0 |
| 40 | Transformer Relay Replacements | AMR | G53 | $0 | $40,000 | $0 | $0 | $0 | $0 |

| REF. NO. | PROJECT DESCRIPTION | LOCATIONS (FY15 ONLY) | ORG | FY15 APPROVED BUDGET | FY16 BUDGET SUBMISSION | FY17 BUDGET SUBMISSION | FY18 BUDGET PLAN | FY19 BUDGET PLAN | FY20 BUDGET PLAN |
|---|---|---|---|---|---|---|---|---|---|
| FY15 - FY25 DESERT SOUTHWEST RRADs PROGRAM | | | | | | | | | |
| REF. NO. | PROJECT DESCRIPTION | LOCATIONS (FY15 ONLY) | ORG | FY15 APPROVED BUDGET | FY16 BUDGET SUBMISSION | FY17 BUDGET SUBMISSION | FY18 BUDGET PLAN | FY19 BUDGET PLAN | FY20 BUDGET PLAN |
| PARKER DAVIS | | | | | | | | | |
| 41 | WIN/CIP [7 Sites] | TBD | G53 | $245,000 | $150,000 | $0 | $0 | $0 | $0 |
| 42 | Basler Relay Replacements | MED D | G53 | $0 | $20,000 | $0 | $0 | $0 | $0 |
| 43 | Line Relay Replacements | KNB/BLY | G53 | $0 | $154,000 | $66,000 | $0 | $0 | $0 |
| 44 | Line Relay Replacements | PHX/LIB | G53 | $0 | $154,000 | $66,000 | $0 | $0 | $0 |
| 45 | Meter Program | TBD | G53 | $0 | $100,000 | $100,000 | $100,000 | $100,000 | $100,000 |
| 46 | Power System Replacement (Comm Ctr) | PHS | G53 | $0 | $50,000 | $0 | $0 | $0 | $0 |
| 47 | Power System Replacement (Microwave Bldg) | PHS | G53 | $0 | $50,000 | $0 | $0 | $0 | $0 |
| 48 | RTU Replacements | COL | G53 | $0 | $200,000 | $100,000 | $0 | $0 | $0 |
| 49 | RTU Replacements | LOB/GPK | G53 | $0 | $85,000 | $0 | $0 | $0 | $0 |
| 50 | Pumping Plant Upgrades | WM1 and WM3 | G53 | $45,000 | $45,000 | $0 | $0 | $0 | $0 |
| 51 | Comm Site Grounding and Tower Inspections | TBD | G53 | $0 | $0 | $60,000 | $0 | $0 | $0 |
| 52 | Fiber Optic Installation | PNL/SUN | G53 | $0 | $0 | $500,000 | $500,000 | $500,000 | $500,000 |
| 53 | Fiber Optic Installation (Full Path, 20 Miles) | GLA/KNB | G53 | $0 | $0 | $75,000 | $800,000 | $0 | $0 |
| 54 | Fiber Optic Installation (Full Path, 22 Miles) | KNB/GLT | G53 | $0 | $0 | $0 | $0 | $880,000 | $0 |
| 55 | PRC-002-2 DME Upgrades | TBD | G53 | $0 | $0 | $100,000 | $100,000 | $100,000 | $100,000 |
| 56 | Relay Replacements | TBD | G53 | $0 | $0 | $300,000 | $300,000 | $300,000 | $300,000 |
| 57 | Comm Site Grounding and Tower Inspections | TBD | G53 | $0 | $0 | $0 | $60,000 | $60,000 | $60,000 |
| 58 | Line Relay Replacements | HEN/MED | G53 | $0 | $0 | $150,000 | $0 | $0 | $0 |
| 59 | Transformer & Line Relay Replacements | AMR | G53 | $0 | $0 | $250,000 | $0 | $0 | $0 |
| 60 | VHF Mobile Radio Replacements | ALL | G53 | $0 | $0 | $50,000 | $0 | $0 | $0 |
| 61 | RTU Replacements | NHV/PRS | G53 | $0 | $0 | $0 | $85,000 | $85,000 | $85,000 |
| | **G5300 TOTALS** | | | **$830,000** | **$1,562,000** | **$1,917,000** | **$2,045,000** | **$2,125,000** | **$1,970,000** |
| 62 | SGRTUC Structure 30-5 Steel Pole Replacement | SGR/TUC | G56 | $0 | $0 | $500,000 | $0 | $0 | $0 |
| 63 | Replace Spook Hill Jumpers (currently rated at 335MVA) with new rated at 675 MVA | SPH | G56 | $0 | $25,000 | $0 | $0 | $0 | $0 |
| 64 | Replace switches 161,261, 361 and jumpers (159 MVA) at Marana Tap with new rated at 175 MVA | MRN | G56 | $0 | $150,000 | $0 | $0 | $0 | $0 |
| 65 | Replace Marana jumpers (162 MVA) at Saguaro Substation with new rated at 175 MVA | SGR | G56 | $0 | $25,000 | $0 | $0 | $0 | $0 |
| 66 | Replace jumpers (92 MVA) at Adams Tap with new rated at 171 MVA | ADA | G56 | $0 | $25,000 | $0 | $0 | $0 | $0 |
| 67 | Replace jumpers (120 MVA) at Apache with new rated at 171 MVA | APE | G56 | $0 | $25,000 | $0 | $0 | $0 | $0 |
| 68 | Physical Security Upgrade | PHS/BLY/PAD/DAD/ COL/LIB | G56 | $50,000 | $700,000 | $500,000 | $0 | $0 | $0 |
| | **G5600 TOALS** | | | **$50,000** | **$950,000** | **$1,000,000** | **$0** | **$0** | **$0** |
| | **PARKER DAVIS TOTALS** | | | **$3,825,927** | **$6,868,000** | **$7,522,000** | **$7,104,000** | **$7,076,238** | **$6,711,497** |
| | | | | | | | | | |
| SALINITY | | | | | | | | | |
| 1 | Knob Relay, Meter, and RTU Upgrade - Desalter Line | Desalter | G53 | $75,000 | $75,000 | $0 | $0 | $0 | $0 |
| 2 | WELLFIELD - Transformer | SON WEL | G52 | $286,700 | $100,000 | $0 | $0 | $0 | $0 |
| | **G5600 TOALS** | | | **$361,700** | **$175,000** | **$0** | **$0** | **$0** | **$0** |
| | **SALINTY TOTALS** | | | **$361,700** | **$175,000** | **$0** | **$0** | **$0** | **$0** |
| | | | | | | | | | |
| | **GRAND TOTALS** | | | **$17,559,722** | **$25,663,000** | **$21,530,000** | **$13,184,000** | **$11,781,238** | **$11,216,497** |

**TABLE OF DISTRIBUTION BY ORG**

| ORG | | FY15 | FY16 | FY17 | FY18 | FY19 | FY20 |
|---|---|---|---|---|---|---|---|
| J0 | | $350,000 | $300,000 | $350,000 | $300,000 | $300,000 | $300,000 |
| G1 | | $0 | $256,000 | $700,000 | $500,000 | $500,000 | $500,000 |
| G2 | | $380,000 | $180,000 | $180,000 | $249,000 | $691,238 | $481,497 |
| G52 | | $2,725,927 | $4,590,000 | $4,255,000 | $4,960,000 | $4,060,000 | $4,060,000 |
| G53 | | $1,140,000 | $2,662,000 | $4,212,000 | $4,050,000 | $4,130,000 | $3,975,000 |
| G56 | | $11,663,795 | $16,175,000 | $9,933,000 | $1,225,000 | $200,000 | $0 |
| G6 | | $1,300,000 | $1,500,000 | $1,500,000 | $1,500,000 | $1,500,000 | $1,500,000 |
| BC-TBD | | $0 | $0 | $400,000 | $400,000 | $400,000 | $400,000 |
| **TOTALS** | | **$17,559,722** | **$25,663,000** | **$ 21,530,000** | **$ 13,184,000** | **$ 11,781,238** | **$ 11,216,497** |

## 8.2 DSW FY16-25 Ten Year Plan (Construction Program)

***DSW Ten Year Plan - Construction Projects***

| PROJECT | System | Fund | Notes | original Est | Estimate FY16-25 | Actuals thru end of June 2015 | PROJECT TOTAL | MDCC Evaluation Score | | | | FY16 | | | FY17 | | | FY18 | | | FY19 | | | FY20 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Compliance | Reliability | Economic | Rank | PD | Non-PD | FY TOTAL | PD | Non-PD | FY TOTAL | PD | Non-PD | FY TOTAL | PD | Non-PD | FY TOTAL | PD | Non-PD | FY TOTAL |
| | | | | | | | | 40% | 35% | 25% | | | | | | | | | | | | | | | | |
| Blythe-Headgate Rock Reroute (Black Point Mesa) | GGPD | PCN | Energized/In Closeout | 2,517 | 30 | 2,197 | 2,227 | 4.0 | 4.0 | 4.0 | 4.0 | 30 | | 30 | | | | | | | | | | | | |
| ED2-ED4 115kV Transmission Line Rebuild | GGPD | PCN | Energized/In Closeout | 12,805 | 23 | 7,161 | 7,184 | 4.0 | 4.0 | 4.0 | 4.0 | 23 | | 23 | | | | | | | | | | | | |
| Mead Substation Stage 14 (Transformer Addition) | GGIN | WCF | Complete/will do Partial Closeout | 4,800 | | 4,424 | 4,424 | 4.0 | 4.0 | 4.0 | 4.0 | | | | | | | | | | | | | | | |
| Davis Substation Maintenance Building | GGPD | WCF | Active | 1,335 | 195 | 1,232 | 1,427 | 4.0 | 4.0 | 4.0 | 4.0 | 105 | 90 | 195 | | | | | | | | | | | | |
| Parker Substation 161kV Switch Replacement | GGPD | PCN | Suspended - assets to be redirected | 2,293 | | 1,067 | | | | | | | | | | | | | | | | | | | | |
| Parker-Davis Facility Rating Year 2 | GGPD | PCN | Active | 9,039 | 1,000 | 7,251 | 8,251 | 4.0 | 4.0 | 4.0 | 4.0 | 1,079 | 4,868 | 5,947 | 752 | 1,884 | 2,636 | | | | | | | | | |
| Parker-Headgate Rock/Bouse 161kV Reroute | GGPD | PCN | Construction on-hold for South of Parker AoA study | 19,195 | 17,698 | 1,088 | 18,786 | 4.0 | 4.0 | 4.0 | 4.0 | | | | 600 | | 600 | 1,068 | 15,650 | 16,718 | 378 | 2 | 380 | | | |
| Mesa Substation Remediation | GGPD | PCN | Active | 1,246 | 3,218 | 317 | 3,535 | 4.0 | 4.0 | 4.0 | 4.0 | 380 | 2,000 | 2,380 | | | | | | | | | | | | |
| Mead Substation Stage 15 | GGIN | WCF | Active | 7,000 | 1,068 | 5,730 | 6,798 | 4.0 | 4.0 | 4.0 | 4.0 | 925 | 90 | 1,015 | 43 | 10 | 53 | | | | | | | | | |
| Mead CCVT Support Structures Replace (Stage 15) | GGPD | PCN | Active | 1,024 | 265 | 757 | 1,022 | 4.0 | 4.0 | 4.0 | 4.0 | 450 | 82 | 532 | | | | | | | | | | | | |
| Gila Substation 161kV to 230kV Rebuild | GGPD | PCN | Active | 12,900 | 10,999 | 1,701 | 12,700 | 4.0 | 4.0 | 4.0 | 4.0 | 1,245 | 9,000 | 10,245 | 1,280 | 200 | 1,480 | 162 | 100 | 262 | 12 | | 12 | | | |
| Gila-North Gila, Gila-Knob 161kV T-Line Reroute | GGPD | PCN | Active | 2,837 | 1,785 | 452 | 2,237 | 4.0 | 4.0 | 4.0 | 4.0 | 35 | 1,750 | 1,785 | | | | | | | | | | | | |
| Tucson Substation Rebuild | GGPD | PCN | Suspended for further analysis | 8,750 | | 2,065 | 2,065 | 4.0 | 4.0 | 4.0 | 4.0 | | | | | | | | | | | | | | | |
| Gila-Gila Valley 34.5kV Laterals Rebuild | GGCL | WMF | Active | | 4,383 | 5 | 4,388 | 4.0 | 4.0 | 4.0 | 4.0 | 150 | 2,850 | 3,000 | 1,140 | 243 | 1,383 | | | | | | | | | |
| Gila-North Gila-Senator Wash 69kV Rebuild | GGCL | WMF | Active | | 550 | 158 | 708 | 4.0 | 4.0 | 4.0 | 4.0 | 200 | 350 | 550 | | | | | | | | | | | | |
| Interstate Wood Crossing - BLY-KNB (critical) | GGPD | WMF | RRADS for FY16 | | 84 | | 84 | 4.0 | 4.0 | 4.0 | 4.0 | 84 | | 84 | | | | | | | | | | | | |
| Mead Spare Transformer (Liberty KU1A to Mead) | GGIN | WCF | Active | 800 | 100 | 459 | 559 | 4.0 | 4.0 | 4.0 | 4.0 | 100 | | 100 | | | | | | | | | | | | |
| Del Bac-Nogales Right-of-Way Renewal | GGPD | PCN | Active | 3,600 | 3,550 | 27 | 3,577 | 4.0 | 4.0 | 4.0 | 4.0 | | 3,550 | 3,550 | | | | | | | | | | | | |
| Facility Rating Mitigation Year 3 (Low Priority) | GGPD | PCN | Suspended to incorporate in FY16 AoA studies | 16,900 | 16,000 | 141 | 16,141 | 4.0 | 4.0 | 4.0 | 4.0 | | | | | | | | | | | | | | | |
| Liberty Series Capacitor Bank Replacement | GGIN | PCN | Proposed FY16 Start | 10,400 | 10,400 | | 10,400 | 3.0 | 4.0 | 3.0 | 3.4 | 1,040 | | 1,040 | 1,040 | 4,160 | 5,200 | 1,040 | 1,040 | 2,080 | 1,040 | 520 | 1,560 | 520 | | 520 |
| Crossman Peak Microwave Facility | GGPD | PCN | Proposed FY16 Start | 4,525 | 4,525 | 25 | 4,550 | 3.0 | 3.5 | 4.0 | 3.4 | 453 | | 453 | 453 | 1,810 | 2,263 | 453 | 453 | 905 | 453 | 226 | 679 | 226 | | 226 |
| Interstate, Highway, Freeway Crossings | Misc | WCF | Planned FY16 AoA Study | 7,599 | 7,599 | | 7,599 | 4.0 | 2.0 | 3.0 | 3.1 | | | | 760 | | 760 | 760 | 3,040 | 3,800 | 760 | 760 | 1,520 | 760 | 380 | 1,140 |
| Mead Substation Stage 16 (2nd New Transformer) | GGIN | WCF | Planned FY16 AoA Study | 7,599 | 7,599 | | 7,599 | TBD by FY16 Study | | | | | | | 760 | | 760 | 760 | 3,040 | 3,800 | 760 | 760 | 1,520 | 760 | 380 | 1,140 |
| South of Phoenix High Priority Projects | GGPD | WCF | Planned FY16 AoA Study | 7,599 | 7,599 | | 7,599 | | | | | | | | 760 | | 760 | 760 | 3,040 | 3,800 | 760 | 760 | 1,520 | 760 | 380 | 1,140 |
| South of Parker High Priority Projects | GGPD | WCF | Planned FY16 AoA Study | 7,599 | 7,599 | | 7,599 | | | | | | | | 760 | | 760 | 760 | 3,040 | 3,800 | 760 | 760 | 1,520 | 760 | 380 | 1,140 |
| Pinnacle Peak-Replace Shunt Cap Bank | GGCR | WCF | Projected for FY17 AoA Study | 7,599 | 7,599 | | 7,599 | 2.0 | 3.0 | 2.0 | 2.4 | | | | | | | 760 | | 760 | 760 | 3,040 | 3,800 | 760 | 760 | 1,520 |
| Parker Substation 161kV Rebuild | GGPD | WCF | Projected for FY17 AoA Study | 7,599 | 7,599 | | 7,599 | 2.0 | 3.0 | 2.0 | 2.4 | | | | | | | 760 | | 760 | 760 | 3,040 | 3,800 | 760 | 760 | 1,520 |
| South of Phoenix Medium Priority Projects | GGPD | WCF | Planned FY16 AoA Study | 7,599 | 7,599 | | 7,599 | TBD by FY16 Study | | | | | | | | | | | | | 760 | | 760 | 760 | 3,040 | 3,800 |
| South of Parker Medium Priority Projects | GGPD | WCF | Planned FY16 AoA Study | 7,599 | 7,599 | | 7,599 | | | | | | | | | | | | | | 760 | | 760 | 760 | 3,040 | 3,800 |
| Nogales-Facility Ratings Improvements | GGPD | WCF | Planned FY18 AoA Study | 7,599 | 7,599 | | 7,599 | 4.0 | 1.0 | 1.0 | 2.2 | | | | | | | | | | 760 | | 760 | 760 | 3,040 | 3,800 |
| Gila Substation 69kV Rebuild | GGPD | WCF | Planned FY18 AoA Study | 7,599 | 7,599 | | 7,599 | 2.0 | 2.0 | 2.5 | 2.1 | | | | | | | | | | 760 | | 760 | 760 | 3,040 | 3,800 |
| Gila Substation 34.5/4.16kV Rebuild | GGPD | WCF | Planned FY18 AoA Study | 7,599 | 7,599 | | 7,599 | 2.0 | 2.0 | 2.5 | 2.1 | | | | | | | | | | 760 | | 760 | 760 | 3,040 | 3,800 |
| South of Phoenix Low Priority Projects | GGPD | WCF | Planned FY16 AoA Study | 7,599 | 7,599 | | 7,599 | TBD by FY16 Study | | | | | | | | | | | | | | | | | | |
| South of Parker Low Priority Projects | GGPD | WCF | Planned FY16 AoA Study | 7,599 | 7,599 | | 7,599 | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | **6,299** | **24,630** | **30,929** | **8,347** | **8,307** | **16,654** | **7,282** | **29,401** | **36,683** | **10,241** | **9,867** | **20,108** | **9,105** | **18,238** | **27,343** |

***Planning Assumptions for projects that have not completed AoA study phase:***

Project start dates are scheduled based on urgency derived from MDCC priority ranking and projected available funding and resources

AoA Studies are conducted under O&M and are planned to take one year.

Until studies are completed, Total Project Cost is estimated at $7.599M

PD values reflect Federal and non-Construction contractor labor

NPD value reflect equipment and construction costs

**Planning Spend Profile**

| $7,599 | PD | | NPD | |
|---|---|---|---|---|
| Year 1 | 10% | $760 | | |
| Year 2 | 10% | $760 | 40% | $3,040 |
| Year 3 | 10% | $760 | 10% | $760 |
| Year 4 | 10% | $760 | 5% | $380 |
| Year 5 | 5% | $380 | | |

***DSW Ten Year Plan - Construction Projects***

| | | | | | | | | FY21 | | | FY22 | | | FY23 | | | FY24 | | | FY25 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PROJECT | System | Fund | Notes | original Est | Estimate FY16-25 | Actuals thru end of June 2015 | PROJECT TOTAL | PD | Non-PD | FY TOTAL | PD | Non-PD | FY TOTAL | PD | Non-PD | FY TOTAL | PD | Non-PD | FY TOTAL | PD | Non-PD | FY TOTAL |
| Blythe-Headgate Rock Reroute (Black Point Mesa) | GGPD | PCN | Energized/In Closeout | 2,517 | 30 | 2,197 | 2,227 | | | | | | | | | | | | | | | |
| ED2-ED4 115kV Transmission Line Rebuild | GGPD | PCN | Energized/In Closeout | 12,805 | 23 | 7,161 | 7,184 | | | | | | | | | | | | | | | |
| Mead Substation Stage 14 (Transformer Addition) | GGIN | WCF | Complete/will do Partial Closeout | 4,800 | | 4,424 | 4,424 | | | | | | | | | | | | | | | |
| Davis Substation Maintenance Building | GGPD | WCF | Active | 1,335 | 195 | 1,232 | 1,427 | | | | | | | | | | | | | | | |
| Parker Substation 161kV Switch Replacement | GGPD | PCN | Suspended - assets to be redirected | 2,293 | | 1,067 | | | | | | | | | | | | | | | | |
| Parker-Davis Facility Rating Year 2 | GGPD | PCN | Active | 9,039 | 1,000 | 7,251 | 8,251 | | | | | | | | | | | | | | | |
| Parker-Headgate Rock/Bouse 161kV Reroute | GGPD | PCN | Construction on-hold for South of Parker AoA study | 19,195 | 17,698 | 1,088 | 18,786 | | | | | | | | | | | | | | | |
| Mesa Substation Remediation | GGPD | PCN | Active | 1,246 | 3,218 | 317 | 3,535 | | | | | | | | | | | | | | | |
| Mead Substation Stage 15 | GGIN | WCF | Active | 7,000 | 1,068 | 5,730 | 6,798 | | | | | | | | | | | | | | | |
| Mead CCVT Support Structures Replace (Stage 15) | GGPD | PCN | Active | 1,024 | 265 | 757 | 1,022 | | | | | | | | | | | | | | | |
| Gila Substation 161kV to 230kV Rebuild | GGPD | PCN | Active | 12,900 | 10,999 | 1,701 | 12,700 | | | | | | | | | | | | | | | |
| Gila-North Gila, Gila-Knob 161kV T-Line Reroute | GGPD | PCN | Active | 2,837 | 1,785 | 452 | 2,237 | | | | | | | | | | | | | | | |
| Tucson Substation Rebuild | GGPD | PCN | Suspended for further analysis | 8,750 | | 2,065 | 2,065 | | | | | | | | | | | | | | | |
| Gila-Gila Valley 34.5kV Laterals Rebuild | GGCL | WMF | Active | | 4,383 | 5 | 4,388 | | | | | | | | | | | | | | | |
| Gila-North Gila-Senator Wash 69kV Rebuild | GGCL | WMF | Active | | 550 | 158 | 708 | | | | | | | | | | | | | | | |
| Interstate Wood Crossing - BLY-KNB (critical) | GGPD | WMF | RRADS for FY16 | | 84 | | 84 | | | | | | | | | | | | | | | |
| Mead Spare Transformer (Liberty KU1A to Mead) | GGIN | WCF | Active | 800 | 100 | 459 | 559 | | | | | | | | | | | | | | | |
| Del Bac-Nogales Right-of-Way Renewal | GGPD | PCN | Active | 3,600 | 3,550 | 27 | 3,577 | | | | | | | | | | | | | | | |
| Facility Rating Mitigation Year 3 (Low Priority) | GGPD | PCN | Suspended to incorporate in FY16 AoA studies | 16,900 | 16,000 | 141 | 16,141 | | | | | | | | | | | | | | | |
| Liberty Series Capacitor Bank Replacement | GGIN | PCN | Proposed FY16 Start | 10,400 | 10,400 | | 10,400 | | | | | | | | | | | | | | | |
| Crossman Peak Microwave Facility | GGPD | PCN | Proposed FY16 Start | 4,525 | 4,525 | 25 | 4,550 | | | | | | | | | | | | | | | |
| Interstate, Highway, Freeway Crossings | Misc | WCF | Planned FY16 AoA Study | 7,599 | 7,599 | | 7,599 | 380 | | 380 | | | | | | | | | | | | |
| Mead Substation Stage 16 (2nd New Transformer) | GGIN | WCF | Planned FY16 AoA Study | 7,599 | 7,599 | | 7,599 | 380 | | 380 | | | | | | | | | | | | |
| South of Phoenix High Priority Projects | GGPD | WCF | Planned FY16 AoA Study | 7,599 | 7,599 | | 7,599 | 380 | | 380 | | | | | | | | | | | | |
| South of Parker High Priority Projects | GGPD | WCF | Planned FY16 AoA Study | 7,599 | 7,599 | | 7,599 | 380 | | 380 | | | | | | | | | | | | |
| Pinnacle Peak-Replace Shunt Cap Bank | GGCR | WCF | Projected for FY17 AoA Study | 7,599 | 7,599 | | 7,599 | 760 | 380 | 1,140 | 380 | | 380 | | | | | | | | | |
| Parker Substation 161kV Rebuild | GGPD | WCF | Projected for FY17 AoA Study | 7,599 | 7,599 | | 7,599 | 760 | 380 | 1,140 | 380 | | 380 | | | | | | | | | |
| South of Phoenix Medium Priority Projects | GGPD | WCF | Planned FY16 AoA Study | 7,599 | 7,599 | | 7,599 | 760 | 760 | 1,520 | 760 | 380 | 1,140 | 380 | | 380 | | | | | | |
| South of Parker Medium Priority Projects | GGPD | WCF | Planned FY16 AoA Study | 7,599 | 7,599 | | 7,599 | 760 | 760 | 1,520 | 760 | 380 | 1,140 | 380 | | 380 | | | | | | |
| Nogales-Facility Ratings Improvements | GGPD | WCF | Planned FY18 AoA Study | 7,599 | 7,599 | | 7,599 | 760 | 760 | 1,520 | 760 | 380 | 1,140 | 380 | | 380 | | | | | | |
| Gila Substation 69kV Rebuild | GGPD | WCF | Planned FY18 AoA Study | 7,599 | 7,599 | | 7,599 | 760 | 760 | 1,520 | 760 | 380 | 1,140 | 380 | | 380 | | | | | | |
| Gila Substation 34.5/4.16kV Rebuild | GGPD | WCF | Planned FY18 AoA Study | 7,599 | 7,599 | | 7,599 | 760 | 760 | 1,520 | 760 | 380 | 1,140 | 380 | | 380 | | | | | | |
| South of Phoenix Low Priority Projects | GGPD | WCF | Planned FY16 AoA Study | 7,599 | 7,599 | | 7,599 | 760 | | 760 | 760 | 3,040 | 3,800 | 760 | 760 | 1,520 | 760 | 380 | 1,140 | 380 | | 380 |
| South of Parker Low Priority Projects | GGPD | WCF | Planned FY16 AoA Study | 7,599 | 7,599 | | 7,599 | 760 | | 760 | 760 | 3,040 | 3,800 | 760 | 760 | 1,520 | 760 | 380 | 1,140 | 380 | | 380 |
| | | | | | | | | **8,359** | **4,559** | **12,918** | **6,079** | **7,979** | **14,058** | **3,420** | **1,520** | **4,939** | **1,520** | **760** | **2,280** | **760** | | **760** |

***Planning Assumptions for projects that have not completed AoA study phase:***

Project start dates are scheduled based on urgency derived from MDCC priority ranking and projected available funding and resources

AoA Studies are conducted under O&M and are planned to take one year.

Until studies are completed, Total Project Cost is estimated at $7.599M

PD values reflect Federal and non-Construction contractor labor

NPD value reflect equipment and construction costs

**Planning Spend Profile**

| $7,599 | PD | | NPD | |
|---|---|---|---|---|
| Year 1 | 10% | $760 | | |
| Year 2 | 10% | $760 | 40% | $3,040 |
| Year 3 | 10% | $760 | 10% | $760 |
| Year 4 | 10% | $760 | 5% | $380 |
| Year 5 | 5% | $380 | | |